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International Paper Co. Nets $7,814,319

This Compares With Net of $16,253,761 In 1941—Sales Amounted To $214,109,218 Which Was About Two Per Cent Below The 1941 Figure—2,614,944 Tons Of Paper And Pulp Were Produced.

Richard J. Cullen, president, in submitting his annual report of the International Paper Company and its subsidiaries, made the following statement:—

Earnings

In 1942 consolidated net profit of International Paper Company and its subsidiaries amounted to $7,814,319 as compared to $16,253,761 in 1941.

The 1942 net profit includes United States post-war excess profits tax credit of $1,919,504. Full excess profits taxes must be paid currently and this credit is recoverable only after the end of the war. Thus only $5,894,815 of the 1942 net profit was available for current use. Of this a total of $4,629,830 was required for payment of regular dividends on the preferred stock.

The 1942 net profits of foreign subsidiaries totalling $2,346,658 have been deducted in arriving at consolidated net profit and are shown in the consolidated balance sheet under reserves instead of being included under earned surplus, as explained in note 2 on page 26. This change in policy has been adopted because of the many uncertainties arising from wartime operation, foreign exchange restrictions and other related problems of the foreign subsidiaries. International Paper Company has not received any funds from its Canadian subsidiaries since the middle of 1941.

Total sales and other income amounted to $214,109,218 in 1942, which was about 2% below the 1941 figure. During the latter part of 1942 curtailment of production by governmental orders was beginning to affect volume in some grades. The sharp decline ($8,439,442) in consolidated net profit reflects in part increased income and excess profits tax rates, the transfer to reserves of the net profit of foreign subsidiaries, and the fact that costs of production increased while selling prices, by order of the Office of Price Administration, remained practically constant throughout 1942 and in some cases were even reduced.

Dividends

Regular quarterly dividends were paid on the Cumulative Convertible 5% Preferred Stock throughout 1942.

A letter was recently mailed to persons who held preferred stock of the former International Paper and Power Company outlining a ruling of the Commissioner of Internal Revenue, under which only a part of the dividends paid by that company from September 28, 1940 to September 27, 1941 were subject to income tax.

No similar question arises with respect to any dividends which have been paid by the present International Paper Company all of which are fully taxable. The first dividend on the preferred stock of the present International Paper Company was paid November 15, 1941.

Taxation

A total of $26,194,550 in taxes—federal, state, local and foreign—was provided for out of 1942 consolidated earnings. This total is after deducting $1,939,335 representing United States and Canadian post-war excess profits tax credits for which the companies receive government obligations which can not be converted into cash until after the end of the war.

Notwithstanding the increased income and excess profits tax rates in effect in 1942, this total amount is less than the $31,149,577 provided for in 1941 because of lower earnings subject to taxes and the absence of the charge for prior years' Canadian taxes which was reflected in the 1941 figures. Nevertheless the amount provided for taxes in 1942 was equivalent to $14.36 on each share of outstanding common stock.

Taxes based only on income (after deducting the post-war excess profits tax credit) absorbed over 73% of the consolidated balance of earnings after all charges except such taxes. In 1941 taxes based on income amounted to over 62% of the consolidated earnings after all charges except such taxes.

As stated in our 1941 Annual Report, the income tax returns of the Canadian subsidiaries for the years 1934-1940 were reviewed by the Income Tax

(Continued on page 26)

Mills Reflect Change to Eight Hour Shifts

Wisconsin Industrial Commission Reports February Average Weekly Payrolls Up 7.5% With 700 Less Workers—Consolidated Co. Buys Adjacent Properties—Wisconsin River Dams Considered Safe.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 12, 1943—The change from 6-hour to 8-hour shifts in some of the Wisconsin paper and pulp mills is reflected in the February employment reports of the Wisconsin Industrial Commission. Although there was a decline of 0.3% in the number of workers (from 23,300 in January to 23,200 in February), payrolls were up 1.2% from $822,000 weekly average in January to $832,000 in February. This indicates that mills are using this means to solve their manpower problems and still maintain peak production. The number of workers is 3.0% less than in February, 1942, when 23,900 were on the payrolls.

Average weekly payrolls in February, 1942, were $773,000, and are now 7.5% higher for 700 fewer workers. The average work week now is 44.3 hours per employee, and the hourly rate has risen to 80.8 cents, with an average weekly pay check of $35.81.

Lengthened hours also are prevalent in the war-congested Milwaukee metropolitan area, where workers are putting in 45.9 hours per week at 78.7 cents, or $36.11 per week. Here too, in 19 reporting plants largely in the container and converting field, there was a drop of 1.3% in the number of employees, the total for February being 1,988. Payrolls are averaging $71,795 per week, a decline of 2.3% from the January total.

Consolidated Co. Buys Adjacent Properties

With a view to possible expansion in the future, the Consolidated Water Power and Paper Company has purchased two properties at Wisconsin Rapids, Wis. One of these is the Nason Mill Works, which has a two-story building and a residence. These are adjacent to the Consolidated mills and will provide space for future building operations. No immediate plans were announced for their use, but the business structure is to be vacated May 1. The residence will remain in use due to a housing shortage.

The other property is the Eugene Miller building, a one-story brick business structure. It will be torn down and the land will be presented to the city for development as a riverbank park.

D. C. Everest on Manpower Commission

D. C. Everest, president of the Marathon Paper Mills Company, Rothschild, Wis., has been appointed a member of the War Manpower Commission for an area of 36 Wisconsin counties defined as the La Crosse area, according to announcement of William H. Spencer of Chicago, regional director. The committee is composed of representatives of management and labor, and will serve in an advisory capacity on manpower problems.

Wisconsin River Dams Considered Safe

Dams along the Wisconsin River are now safe from damage by the spring ice breakup, since several jams against the gates at various mills gave way without difficulty, and the swift current has carried the accumulations downstream.

Although the river flow reached 10,900 cubic feet per second, no danger is anticipated from high water, due to the emptying of the various storage reservoirs of the Wisconsin Valley Improvement Company and the retention of vast quantities of water from the spring thaws. The reservoir at Spirit River, near Tomahawk, Wis., is now completely filled, and the Big Eau Plaine lacked only a few inches of being at capacity. This storage will assure a uniform power supply during the late summer season.

To Hold Ladies Nite Dinner Dance

The Michigan Division of the American Pulp and Paper Mill Superintendents Association will hold its Annual Ladies Nite Dinner Dance on Saturday evening, May 1, 1943 at the Park-American Hotel in Kalamazoo.

Harry D. Eliason of the Cellulose Sales Company, Inc., has consented to act as the toastmaster of the evening. Jack Dickson and Roy Holden, assisted by two members of last years committee—"Baldy" Smith and Jake Parent are in charge of the cocktail hour which will begin at 7:00 P. M. in the East Room. After the cocktail hour, dinner will be served in the main dining room, followed by dancing to the music of Myrtie Ghysels and her orchestra.

At the intermission, Professor Sam Shire, D.F.P. (Doctor of Funny Pictures) KVP, will lecture with illustrations on "Gremlin Photography."

Assisting Chairman Al Perlick in planning the party are the officers of the Division: Vice Chairman Glen Sutton, 2nd Vice Chairman Ralph Atkins and Secretary-Treasurer, Joe Waber—the program committee: O. W. Callighan, L. H. Breyfogle, Merton S. Fogerty and Fred Hodgemire; Committeeman at Large, Frank Eilers; and National 2nd Vice-Pesident, Ray L. Barton.

Reservations may be made at the Park-American Hotel for this Superintendents Party of the Year to be held on Saturday, May 1.

R. M. Buckley Joins Soundview Pulp Co.

R. M. Buckley of Tacoma, resigned from the War Production Board on March 1 and joined the Soundview Pulp Company of Everett. Mr. Buckley will represent the Soundview Pulp Company in its various eastern activities. A portion of his time will be spent on the Pacific Coast.

Mr. Buckley has been with the War Production Board for over one year in serving in his various capacities. Starting with the assignment on kraft pulp, he later became assistant to the chief of the Pulp and Paper Branch. Subsequent positions with the War Production Board included assistant to the Deputy Director General of Industry Operations.

Prior to Mr. Buckley's positions in Washington, he was associated with St. Regis Paper Company, Kraft Pulp Division in Tacoma.

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Actual Newsprint Supply Still a Question

Although Power Situation is Most Favorable Adequate Pulp Supplies Based Upon Pulpwood Available Appears Less Certain — Fraser Companies Purchase Over 600,000 Acres of Timber Lands.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., April 12, 1943—The interview on the newsprint situation given in New York a day or two ago by Herbert J. Symington, power controller for Canada, is regarded here as clearing up another doubtful factor in regard to newsprint supplies. It should be pointed out, however, that when Mr. Symington gave it as his opinion that newspaper publishers have nothing to fear in regard to newsprint supplies until late in 1944 he was referring only to the question of supplies of power for keeping up present production, and that there are other factors which may vitally affect operations.

Pulp Supply Still a Question

In addition to the power situation, now bettered by huge new developments coming into operation, there has been and still is, the question of pulp supplies. Some time ago a serious shortage of pulp seemed inevitable, owing to diversion of manpower from woods operations. Prompt action combined with financial incentives, resulted in a better cut than at one time seemed possible. Much of this, however, has still to be floated to the mills, and much will depend upon the character of the spring drives about to start. The spring break-up on Canadian rivers is late this year. It may be, as Mr. Symington said, that this will cause only a temporary shortage, or slow up, in shipments of newsprint to the United States, but it is another illustration of the many factors entering into the situation and emphasizes the continued need of economy in the use of newsprint.

Pulpwood Supply Sets Newsprint Output

Since Mr. Symington made his statement Munitions Minister Howe has spoken on the subject and he emphasizes what has been said here. He points out that no entire reports are available giving the extent of the pulpwood which will actually be available at the mills will it be possible to say what the newsprint situation will be. The winter this time has been unusually long and this may mean that it has been possible to cut a larger amount than was first thought.

This and good conditions during the spring drives may obviate the need for further newsprint rationing beyond that already in force, but it will be impossible to size up the situation until later in the season.

Fraser Companies Buys Timberland

According to a dispatch from Saint John, N. B., the Fraser Companies, Limited, of Edmundston, N. B., have purchased between 600,000 and 700,000 acres of timber land on the Tobique River from the New Brunswick Railway Company for an undisclosed price.

The area involved is about 40% of the total land area held by the railway company.

Amends Converted Paper Order

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 12, 1943—To alleviate hardships in connection with the manufacture of converted paper products under General Conservation Order M-241-a, and make possible the liquidation of inventories, the War Production Board has amended the order.

As amended, the order permits the manufacture of the following products up to these percentages of 1942 production: table covers, all types, and shelf and drawer lining paper, 60 per cent, and venetian blinds, 90 per cent. Non-commercial decalcomania transfers were removed from the restricted list, as were fire works manufactured for the Armed Forces.

At the same time, the percentages for paper napkins and towels were increased to 95 per cent and doilies to 60 per cent. Quota restrictions on envelopes, tablets, notebooks, paper stationery, waxed papers, toilet seat covers and paper ribbons were eliminated. To avoid discrimination in favor of comparable grades as yet unrestricted, friction and flint-glazed paper, metallic and mica-coated papers and plated and mat finished papers were also removed from List A, which limited their production to 50 per cent of 1942 output.

Paragraph (b) (2) as now amended gives converters or those engaged in the manufacture of certain commodities from pulp, paper and/or paperboard the privilege of continuing to manufacture the articles enumerated in List B for the period of 90 days following February 15, if they use pulp, paper or paperboard on hand January 15, 1943.

May Continue Ceiling Prices

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 12, 1943—Manufacturers of toilet tissue and paper towels who undertake to reduce their basis weights on these products at WPB request may continue present ceiling prices temporarily provided they obtain written permission from the OPA, it has been announced.

This permission will be given, OPA said, only in special cases in which test runs are made at the request of the WPB, for limited quantities only, and for a limited period of time, and are being made only to discover improved methods of conserving materials and for cost-finding purposes.

Temporary ceilings in no event shall exceed the maximum price of the product for which the substitution is made. In applying for temporary maximum prices, manufacturers must set forth fully the reasons for the test run, its duration and scope, and other pertinent information.

Authority to allow the present ceilings during the experimental period is provided in Amendment No. 3 to Maximum Price Regulation No. 266 (Certain Tissue Paper Products), effective April 5th.

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Paper Demand is at High Level in Midwest

All Leading Types of Paper Are Active With Labor Shortage More Acute in Waste Paper Trade—Associations Cooperate on End-Use Study—Materials and Labor Costs May Limit Container Output.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., April 12, 1943—No let-up in the confusing market picture was reported in Chicago paper circles this week. Some lessening of the tension around newsprint lines was reported but, for the most part, all lines continued to pound away at ceiling peaks with demand showing no signs of slackening. There were some indications that a decline would be in evidence within the next two months as, here and there, reports showed peaks of last month which were not expected to be reached in April because of raw material shortages and rising labor costs.

Manpower factors continued to be acute here, particularly in the waste paper industries and even more noticeable in the jobber trades.

Book and cover papers showed a good grade of demand with order back logs maintaining about an even keel during the month thus far. Ground woods were steady to strong with this classification likewise having plenty of trouble filling orders. The "we'll have to say no" character of the general market was also very much in evidence in all grades of sulphites according to local reports. The board market was strong but reported uncertain as to definite trend awaiting lots of clarification. All lines were definitely concentrating in a drive to demonstrate the "end use" importance of paper in war time.

Associations Cooperate on End-Use Study

Following the regional meetings of the National Paper Trade Association held in Chicago on April 5, the western division of the Salesmens Association of the Paper Industry has redoubled its interest in its study of end-use and essentiality. It is reported that much of the regional program of the N.P.T.A. was given over to the vital necessity for merchant cooperation in sending in information on end use essentiality and the N.P.T.A. presented the forms to be used by the trade in forwarding this information to the home office. It is understood that if fifty per cent of the dollars and cents sales are collected and indicate the importance of paper in the war industry there will be a genuine chance of the Office of Civilian Supply taking steps to make paper an essential commodity.

The Salesmens Association's committee on a study of end use and essentiality fits into the picture locally as a powerful force in stimulating local merchants and jobbers to get the forms filled in and sent in as quickly as possible. The Association is asking all member sales executives to urge every one of their contacts to do this job immediately and there is a growing belief, locally, that immediate and constructive cooperation here will do a job certain to be of tremendous help to the industry in the trying months to come. A good part of the April 5 meeting of the Salesmens Association was given over to ways and means of assisting the N.P.T.A. in carrying out the very program it was delivering at about the same time in another hotel in Chicago.

Container Outlook Fairly Good

Container Corporation of America first quarter sales volume is expected to show a sharp decline as a result of the difficulty of obtaining raw materials and increasing labor costs. This prediction was made this week by Walter P. Paepcke, president, before a group of stockholders. Company first quarter sales are expected to be about one third less than for the same period a year ago. Profits, based on present tax laws, are going to be substantially lower than last year and shipments, Mr. Paepcke pointed out, were off in the first quarter of 1943. However, the Container head expected the second quarter to take a brighter hue with April sales volume perhaps equaling or exceeding that of April, 1942. May and June may show similar increases. In his analysis, Mr. Paepcke pointed out that first quarter sales in 1942 showed exceptional gains and the second and third quarters tapered off slightly with the fourth quarter coming back strong. Most of the firm's plants are at present producing more than 50% of their output for war needs and some are engaged 100% in war activity Mr. Paepcke pointed out. He expected that the 1943 dividend disbursement would "probably parallel" the conservative trend followed in 1942.

NPTA President Slowly Improving

Reports from Springfield, Illinois, indicate that Corwine E. Roach, newly elected president of the National Paper Trade Association, will be forced to go through a long period of convalesence following the severe illness encountered ten days ago. It is stated that Mr. Roach, in the St. John's Hospital in that city, is still unable to receive guests though he has fully recoveed consciousness and is slowly making progress. The head of the Capitol City Paper Company, a noted civic leader throughout the State, was credited with "simply having worked too hard under most trying conditions".

B. C. Produces 327,474 Tons

While full details are not yet available, it is estimated that the pulp and paper production in the Province of British Columbia for the year 1942 totalled 327,474 tons. Of this amount 252,559 tons was composed of newsprint while 74,915 tons of wrapping and other papers was produced in British Columbia plants. This estimate is issued by the Forest Branch of the B. C. Department of Lands at Victoria. The Forest Branch further estimates that 162,272 tons of pulp was shipped out of the province in addition to that actually manufactured into paper within British Columbia.

New Uses for Wood Pulp are Being Tested

Canadian Industry is Investigating Possibilities of Utilizing Plants For Other Products Than Newsprint — Groundwood Pulp as Base For Plastics and Waste Liquor Uses Are Being Studied.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 12, 1943—Canadian pulp and paper manufacturers are still unconvinced that they were not given the short end in the recent price adjustment of newsprint. They can see little hope of getting their finances in proper shape against the day when Scandinavian manufacturers are able to return to the American markets. This does not mean that they are going to resign themselves to inevitable defeat. For years they have been investigating the possibilities of using their huge plants for the manufacture of something else besides newsprint. They are reticent on the subject, but it is becoming a settled conviction among those just on the fringe of the industry that a few surprises may be sprung when the war is over, if not before that happy time.

The war has shown that when a problem has to be met, there are scientists who can meet it. These men with their test tubes have already demonstrated that high grade sulphite pulps can be used to advantage in explosives. In fact, cellulose made from wood pulp is just as good as that made from cotton linters for nitrating purposes.

The capture by Japan of the world's leading rubber plantations and the resulting development of synthetic rubbers, created an increased demand for alcohol. Alcohol can be made economically from the waste liquor from paper mills. Recently the Ontario Paper Company at Thorold decided to erect a plant there to produce alcohol in this way.

Past Successes Indicate Great Possibilities

It is an old story now, but the industry is reminded that a few years ago a way was found for making yeast from waste sulphite liquor. The Mersey Paper Company pioneered in the work at its plant in Liverpool, N. S., working with the Best Yeast Company. Commercial bakers' yeast produced by this company reached the stage a year or so ago where the company was able to establish a yeast plant at Thorold, where it, too, makes use of sulphite liquor from Ontario Paper Company.

A research unit connected with McGill University at Montreal has done much work on cellulose and a number of pulp and paper companies are actively engaged in the development of new products in the plastics group, with promising success. One leading pulp manufacturing firm has developed a process for treating groundwood pulp from which can be made a product that looks like wallboard with a high finish. It can be worked much as ordinary lumber is worked except that it cannot be nailed.

Groundwood Pulp as Plastic Base

Experiments are going forward on plastics with a groundwood pulp as a base. The removal of resins and lignins creates a chemical change in the base, but the resulting product can still be run through an ordinary paper machine to become a thin sheet the full width of the machine. It is somewhat brittle and spotted, but can be laminated into a sheet or board of any desired thickness by using the resins as a cement under high pressure. The product is stronger than plywood and beautiful in appearance and can be molded to any desired shape.

The uses to which this new product can be put are not limited to things for which sheets are required. It can be ground up again and made into a pliable mass and used to mold into shapes for any number of things or it can be extruded from a nozzle and squirted into molds for a variety of uses.

If civilization is, as so many seem to think, just on the eve of a "plastic" age, it would seem certain that Canada's pulp and paper making facilities are also nearing the beginning of a new era in which newsprint manufacture may be only an incidental sideline.

Container Corp. Gets Navy E

Award of the Army-Navy "E" to the Philadelphia plant of the Container Corporation of America has just been announced by Under Secretary of the Navy, James V. Forrestal.

Walter P. Paepcke, president of Container Corporation of America, in discussing the "E" award, said, "It is indeed gratifying to have the employees of our Philadelphia plant receive this outstanding honor for their contribution to the war effort. As far as we know, this is the first "E" award thus far made in the shipping container and folding carton industry. This recognition cannot help but emphasize the important role being played by paperboard products in packing and safely transporting military supplies to our soldiers and allies fighting on many foreign fronts."

Container Corporation's Philadelphia plant is located in the section of the city known as Manayunk. It is on an island bounded by the Schuykill River and the Schuylkill Navigation Canal. The location is of interest because it has been the site of paper making operations for many decades, and the first sodapulp mill in this country was built there.

Today the plant houses one of the largest paper machines in the world, and behind its guarded gates, hundreds of tons of paperboard products, as necessary to the war effort as guns, tanks, planes, and ships, are produced every day. More than one thousand men and women from the surrounding districts of Manayunk and Roxborough run the assembly lines and machines of this plant.

A Correction

Through an error, the concluding paragraph in the item headed, "Joins Bermingham & Prosser," on page 36 of the April 8 issue of the PAPER TRADE JOURNAL was incompletely stated. It should read: He is a former vice-president of the Salesmen's Association of the Paper Industry and is chairman of its membership committee. Mr. Hutchison will have his headquarters at the New York office of the Bermingham & Prosser Co., 10 East 40th street.

Government Paper Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 14, 1943—A. G. Nelson Paper Company has been awarded the contract for furnishing the Government Printing Office with 30,500 pounds of white super calendered book paper at 7.75 cents. Other recent paper awards made by the Printing Office include the following:

Walker Goulard Plehn Company will furnish 12,064 pounds of kraft wrapping paper at 5.5 cents, and Barton, Duer & Koch Paper Company will furnish 248,625 pounds of cream bristol board at 6.75 cents. R. P. Andrews Paper Company will furnish 52,920 pounds of white Vac Cap Bac poster paper at 7.35 cents and the Paper Corp. of U. S. will furnish 66,300 pounds of 50% rag, green index paper at 13.55 cents.

The Mudge Paper Company will furnish 27,650 pounds of 50% rag, buff index paper at 12.75 cents and 38,400 pounds of same 25% rag at 12.5 cents. Bulkley, Dunton & Co. will furnish 27,409 pounds of 25% rag, white bond paper at 11.54 cents and Walker Goulard Plehn Company will furnish 60,000 pounds of machine process coated book paper at 7.75 cents. The Mudge Paper Company will furnish 109,120 pounds of white rope drumhead manila paper at 18 cents.

Cauthorne Paper Company will furnish 34,559 pounds of 25% rag, mimeograph paper at 8.75 cents and Barton Duer & Koch Paper Company will furnish 40,000 pounds of chemical wood white index paper at 6.55 cents. The Stanford Paper Company will furnish 23,200 pounds of Warren's white Bibli-opaque paper at 8.58 cents and the R. P. Andrews Paper Company will furnish 2,330 sheets of Drua-Glo Hammermill cover stock at $216.69.

Marquette Paper Company will furnish 430,800 pounds of white offset coated poster paper at 7.95 cents and Barton, Duer & Koch Paper Company will furnish 233,350 pounds of production coated posted paper at 6.55 cents. Cauthorne Paper Company will furnish 37,900 pounds of white chemical wood writing paper at 7.25 cents and the same firm will also furnish 200,000 pounds of white chemical wood writing paper at 6.72 cents.

Lanston Monotype Machine Company will furnish 20,000 pounds of monotype keyboard and casting machine paper at 14 cents and the Marquette Paper Company will furnish 217,005 pounds of yellow chemical wood writing paper at 8.2 cents. R. P. Andrews Paper Company will furnish 192,000 pounds of Hammermill opaque paper at 8.68 cents, and the Marquette Paper Company will furnish 192,000 pounds of English finish sulphite paper at 8.75 cents.

Paper Corporation of U. S. will furnish 55,520 pounds of white antique finish offset paper at 7.9 cents and Walker Goulard Plehn Company will furnish 21,610 pounds of 25% rag, bond paper at 13.75 cents. The same firm will also furnish 7,130 pounds of yellow chemical wood writing paper at 8.5 cents. Wilcox Walter Furlong Paper Company will furnish 21,749 pounds of chemical wood white writing paper at 8 cents and the same company will also furnish 18,704 pounds of the same at 7.5 cents. Paper Corp. of U. S. will furnish 71,100 pounds of offset book paper at 7.3 cents and Eastern Corporation will furnish 90,000 pounds of white sulphite writing at 33 cents per ream. Marquette Paper Company will furnish 52,326 pounds of salmon ground wood writing paper at 5.4 cents.

R. P. Andrews Paper Company will furnish 55,440 pounds of white chemical wood index paper at 7.6 cents and Walker Goulard Plehn Company will furnish 22,899 pounds of white chemical wood bond paper at 8.25 cents.

The Whitaker Paper Company will furnish 7,500 pounds of plate wiping paper at 7.3 cents and the Stanford Paper Company will furnish 300,000 sheets of white tissue paper, 12 lbs., at $2.135 per M sheets. Cauthorne Paper Company will furnish 72,720 pounds of chemical wood writing paper at 7.24 cents and the same firm will also furnish 34,845 pounds of chemical wood white ledger paper at 8.14 cents. Walker Goulard Plehn Company will furnish 570,000 pounds of chemical wood buff writing paper at 8 cents and the same firm will also furnish 77,328 pounds of 50% rag, yellow index paper at 12 cents.

Whiting & Co. will furnish 41,550 pounds of 25% rag, yellow bond paper at 14 cents and Bulkley Dunton & Company will furnish 6,859 pounds of pink duplicating paper at 8.55 cents and also 6,526 pounds of same white at 8.05 cents. Marquette Paper Company will furnish 20,800 pounds of white chemical wood manifold paper at 8.47 cents and the Cauthorne Paper Company will furnish 26,017 pounds of white chemical wood writing paper at 6.74 cents. Walker Goulard Plehn Company will furnish 22,637 pounds of chemical wood white writing paper at 7.6 cents and the same firm will furnish 7,296 pounds of process coated book paper at 6.65 cents.

Cauthorne Paper Company will furnish 5,696 pounds of 50% rag white ledger paper at 15.5 cents and Walker Goulard Plehn Company will furnish 2,268 pounds of 25% rag, white bond paper at 14 cents. The latter firm will also furnish 12,000 pounds of 25% rag, white bond paper at 13.75 cents and 16,514 pounds of 25% yellow same at 14.5 cents. The Stanford Paper Company will furnish 22,450 pounds of chemical wood map paper at 15.20 cents and the Central Ohio Paper Company will furnish 100,000 pounds of buff offset book paper at 7.87 cents.

The Old Dominion Paper Company will furnish 118,200 pounds of 25% rag mimeograph paper at 9.2 cents. Walker Goulard & Plehn Company will furnish 57,400 pounds of chemical wood white writing paper at 6.12 cents and also 46,000 pounds of same at 6.12 cents. Same company will also furnish 57,400 pounds same at 5.88 cents and 46,000 pounds same at 5.88 cents. The same firm will also furnish 57,400 pounds same at 5.81 cents and 46,000 pounds same at 5.81 cents.

D. L. Ward Company will furnish 345,000 pounds of white chemical wood ledger paper at 7.73 cents and Paper Corp. of U. S. will furnish 188,800 pounds of white offset paper at 6.97 cents. Marquette Paper Company will furnish 13,770 pounds of opaque offset paper at 8.5 cents, and the same firm will furnish 84,000 pounds of machine finish book paper at 6.93 cents.

The Cauthorne Paper Company will furnish 32,000 pounds of chemical wood white writing paper at 6.72 cents and the Marquette Paper Company will furnish 54,600 pounds of white offset book paper at 7.45

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COMPLETE DE-INKING PLANT AND PAPER MILL

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Attractive price for immediate disposal.

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PLANT CONTAINS:—

Three cylinder Paper Machine . . . twenty six Dryers 68″ by 48″ diameter . . . Calender Stack . . . Rewinder . . . Cutter . . . Pulp Baler . . . Two one ton Midwest Beaters . . . One 3 ton Shartle Pulper . . . One Six Cylinder Duster . . . Dilts Classifiner and Riffler . . . One Jordan . . . Vortraps . . . Two Bird Screens, ample Chests . . . Pumps, all installed ready for operation . . . De-Inking Unit contains one Cooker, capacity three ton per batch . . . Two specially designed Washers erected, one cooker included, not erected . . . Pumps, Motors completely installed, ready for immediate production . . . also two 150 H. P. Boilers, stoker feed machine shop and complete testing equipment.

This Pulp and Paper Mill was operated for a short time only,—all equipment in excellent condition.

If interested in purchasing this Plant please communicate with

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Telephone Court 6760

cents. Walker Goulard Plehn Company will furnish 50,000 pounds of white offset book paper at 6.99 cents and the Marquette Paper Company will furnish 132,000 pounds of white chemical wood ledger paper at 8.2 cents. The same firm will also furnish 150,000 pounds of chemical wood white ledger paper at 7.85 cents and the same company will furnish also 30,298 pounds of same at 8.2 cents. Barton, Duer & Koch Paper Company will furnish 43,200 pounds of chemical wood white mimeograph paper at 7.08 cents and Walker Goulard Plehn Company will furnish 40,000 pounds of chemical wood pink bond paper at 7.75 cents.

Franklin Research Company will furnish 101,610 pounds of 50% rag, white litho finish chart paper at 18.625 cents and also 73,920 pounds of same at the same price. The same company will also furnish 694,500 pounds of 50% rag, nautical chart paper at 18.625 cents. Walker Goulard Plehn Company will furnish 51,000 pounds of chemical wood white bond paper at 8.75 cents and D. L. Ward Company will furnish 324,000 pounds of buff chemical wood writing paper at $6.65 per cwt. The Stanford Paper Company will furnish 133,000 pounds of Warren's special machine finish water resistant book paper at 15.93 cents.

Boston Paper Trade Association Meets

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 12—Irving N. Esleeck, president of the Esleeck Manufacturing Company, was re-elected president of the Boston Paper Trade Association at the 57th annual meeting of the organization, held at the Algonquin Club, Thursday evening, April 8. Matthew O. Byrne was elected first vice-president in place of Major John H. Brewer, now in the Army Air Corps. First Lieutenant James R. Carter, of the Army Air Corps, was re-elected second vice-president; T. Charles Casey, treasurer, and Frank B. Cummings, secretary.

The following committees were chosen:

Executive committee—Norman Harrower, Charles W. Fields and E. Edwin Porter.

Membership Committee—W. N. Stetson, Jr., Royden Loring, M. O. Byrne, Willard H. Loud, and Hubert W. Lockhart.

Committee on Arbitration—George W. Wheelwright, Arthur L. Hobson, Charles Shaw, Harry Thayer, and Albert T. Carter.

William Ross was elected auditor.

The names were presented by Colonel Charles S. Proctor, chairman of the nominating committee.

After the reception and before the approximately 150 members and guests sat down to dinner, the Star Spangled Banner was sung. President Esleeck was in the chair during the business meeting.

Robert A. Chase, of the Nashua River Paper Company, was elected to regular membership.

Names of those who had died during the year were read as follows:—E. Stanley Morse, George E. Montague, William E. McLellan, and W. Gardner Very.

It was voted to contribute $100 to the Red Cross.

Flowers from the head table were sent during the meeting to John E. A. Hussey of the "old guard" and a charter member of the association, who was unable to attend on account of illness.

After the business meeting, Edmund Stevens, war correspondent for the *Christian Science Monitor*, the guest speaker, gave a most interesting talk on "The War Front from the Desert of North Africa to Moscow." Mr. Stevens flew from Casablanca to Turkey with Churchill and to Moscow with Wendell Willkie. He promptly answered all questions, of which there were an unusual number, during the period which followed his talk.

Among those present was M. C. Dobrow, secretary-treasurer of the Writing Paper Manufacturers Association.

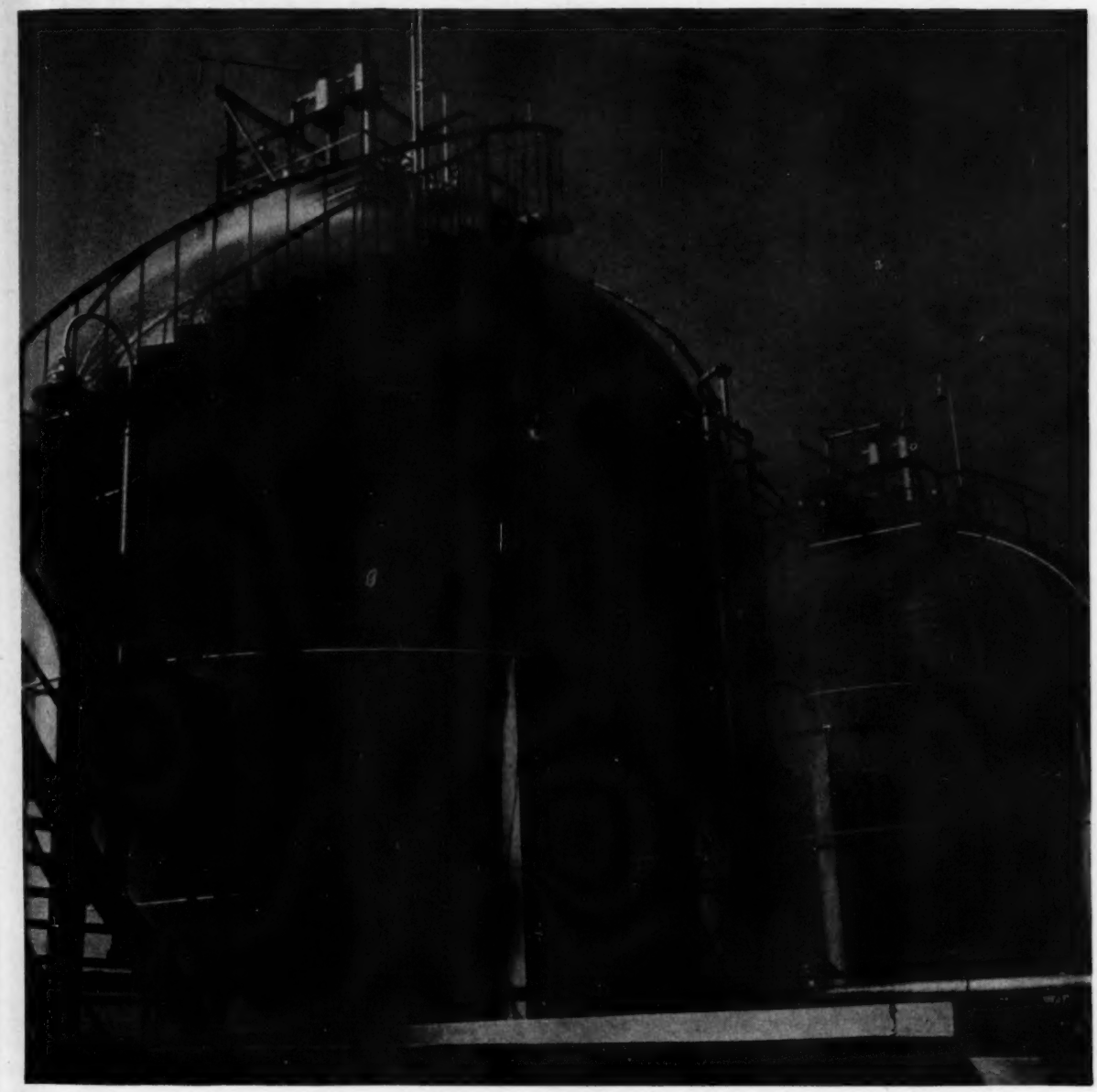
Those attending included the following:

D. P. Abercrombie, Jr., Raymond C. Adams, Raymond J. Allen, R. H. Allen, Wm. Anders, S. W. Bartlett, Ernest W. Beals, Ralph G. Beckett, Lewis C. Bills, Floyd H. Blackman, John Blackman, H. J. Bourque, O. T. Bracken, J. F. Burke, C. A. Burrell, Matthew O. Byrne, Phillip Byrne, E. C. Calkin, John Calligan, James C. Campbell, Holley Cantine, A. T. Carter, Hurbert L. Carter, T. Charles Casey, N. R. Catharin, Guy S. Chase, Howard E. Chase, Robert Chase, Lewis L. Claflin, John G. Clark, E. P. Clausmeyer, S. C. Collins, Thomas Cook, E. A. Crowell E. L. Cummings, Frank B. Cummings,

Ralph Day, Adnah C. Denison, M. C. Dobrow, H. M. Donahue, E. R. Donnelly, James J. Dwyer, Robert W. Ely, Wm. F. Erisman, Irving N. Esleeck, C. A. Esty, Herbert Farrier, Chas W. Fields, H. C. Fowler, A. Frank, Paul B. Fraser, Peter Freedman, M. S. Gibson, L. Gordan Glazier, C. S. Hall, Frank Halloran, Victor A. Hansen, C. W. Harvey, Edgar P. Hay, Fred Herbolsheimer, H. Hever, Arthur L. Hobson, Walker B. Holmes, F. J. L. Hoss, Hartley A. Hurlbert, John P. Ingalls, John Johnson, Paul M. Jones, John Kelly, Everett E. Ketchem, Norman Kimball, Fred Korbel, Carl J. Knutson.

Herbert A. Lindenberg, E. H. Little, H. W. Lockhart, E. R. Lyman, Thomas Lyons, M. L. Madden, Russell Madden, Fred Main, F. H. Masselink, Jack Mathers, Fred May, W. E. McNaught, Frank H. Merrill, Herman Miller, C. B. Mills, Ralph H. Morrill, Geo. F. Morrison, H. A. Moses, J. L. Munro, E. J. Murphy, F. W. Nason, Chas. W. Nelson, Wm. N. Newton, Chas. O'Brien, J. J. O'Brien, Frank O'Neil, Robert O'Neil, Kilby Osborn, Maurice A. Park, N. J. Patterson, Leon M. Poore, W. E. Porter, Walter M. Pratt, Charles S. Proctor, Richard Proctor,

Ernest Reid, C. E. Rice, Ralph P. Robinson, Wm. Ross, Wm. C. Ross, F. H. Savage, Charles Shaw, John J. Shay, Herbert Simonds, G. T. Singleton, E. A. Sitzer, Joseph D. Starr, Jr., W. N. Stetson, Edmund Stevens, H. A. Stone, . M. Stone, E. J. Sullivan, J. H. Sweet, R. P. Teele, Harry Thayer, C. W. Townsend, F. Bendel Tracy, H. H. Tucker, John Vivian, Eric Wallin, W. H. Walpole, Thomas C. Walsh, K. H. Ways, R. H. Welch, C. Frederic Wellington, Joseph Wenning, Jr., George Wheelwright, Ralph White, Jack Whitney, Frank Winter, A. C. Wiswall, E. L. Wood, Emery Wright, H. H. Young, and John D. Zink.



AMERICA'S WAR PRODUCTION DEPENDS ON TANKS LIKE THESE

Take a good look at these huge spherical tanks. Chances are your hose, your belts, your packings may come from them or from others just like them.

These are used for storing butadiene in the first of the synthetic plants operated by U. S. Rubber Company . . . a second will soon be in production.

Having worked in the field of synthetic rubber since 1921 we know what uses each of the five basic types of synthetic rubber is best suited for . . . Neoprene, Buna-S, Buna-N, Butyl and Thiokol . . . U. S. Rubber uses all five types . . . knows which one to select for the performance required . . . and how to compound the specific synthetic rubber for the specific task. This experience is important to you.

Our booklet on synthetic rubber will give you much valuable information. Send for your copy.

Mechanical Goods Division

UNITED STATES RUBBER COMPANY

ROCKEFELLER CENTER • NEW YORK

INTERNATIONAL PAPER CO. NETS $7,814,319

(Continued from page 13)

Department of Canada early in 1942 and a tentative settlement was arrived at and paid by the Canadian companies. However, this settlement has not been finally approved by the Canadian income tax authorities.

Renegotiation of Contracts

Under the renegotiation provisions of the Sixth Supplemental National Defense Appropriation Act, as amended, some of the sales of the Company and its subsidiaries may be subject to renegotiation. Direct sales subject to the Act represented approximately 2% of the companies' total sales in 1942 and the amount of indirect sales which may be subjected to the Act is not known. Therefore, the effect of any possible renegotiation on the net profit for 1942 cannot be determined at this time.

Working Capital

Your company is in a reasonably satisfactory working capital position. Total current assets at December 31, 1942 amounted to $70,449,275, over five times current liabilities of $13,461,636. Net working capital of $56,987,639 showed an increase of $12,575,900 since December 31, 1941, of which $7,565,075 represented increases in the net working capital of Canadian and other foreign subsidiaries.

Cash of $6,816,886 held by United States companies is sufficient though not excessive for all their anticipated requirements. United States federal income and excess profits tax liability of $23,398,344 is fully covered by holdings of tax anticipation certificates.

The Canadian and other foreign subsidiaries held $6,574,942 of cash and $6,298,253 of Dominion of Canada short term treasury bills. At the present time this cash is not available for use in the United States.

Funded Debt and Capital Stock

Funded debt of International Paper Company and subsidiaries at December 31, 1942 amounted to $54,518,782 (net) exclusive of maturities and sinking funds due in 1943 which were classified as current liabilities. This represented a net reduction of $3,179,537 since December 31, 1941.

As part consideration for the jute board mill at Three Rivers, Michigan, acquired from The Eddy Paper Corporation in November 1942, International Paper Company issued $1,699,547 of Purchase Money Obligations bearing interest at 3% and maturing serially from 1943 through 1952.

The common stock purchase warrants of International Paper Company expired by their terms on September 26, 1942. Counsel advised that under New York statutes any extension of the expiration date would be impracticable. All rights formerly represented by the warrants terminated on the expiration date and they are no longer shown as outstanding on the balance sheet.

Mills and Woodlands

Expenditures for construction, purchase and improvement of mill properties were sharply restricted in 1942. Expenditures totalled $7,456,276 (net) of which $2,829,212 was spent for completion of the additional kraft mill and the shipping container plant at Georgetown, South Carolina, described in last year's report. Both the new kraft mill and the shipping container plant began operations early in 1942.

No important purchases of woodlands were made during 1942, cost of acreage acquired being less than half of the amounts charged off for depletion and realized on stumpage sales.

Operations

During 1942 International Paper Company and its subsidiaries produced a total of 2,614,944 tons of paper, paperboard and pulp as compared with 2,653,800 tons in 1941, a decrease of 1.4%. The tonnage figures by grades for 1942 compare with 1941 as follows:

	1942	1941
UNITED STATES:		
Kraft board (unbleached)	831,929	835,487
Kraft wrapping and bag paper (unbleached)	174,117	199,618
Bleached kraft paper and board	135,012	129,439
Unbleached kraft specialty papers	114,479	103,883
Kraft pulp for sale	168,617	98,769
Total kraft board, paper and pulp	1,424,154	1,367,196
Groundwood specialty papers	183,781	198,449
Book and bond papers	136,669	171,234
Other pulp and paper grades	28,438	53,239
Jute board	27,037	50,044
Total United States	1,800,079	1,840,162
CANADA:		
Newsprint	494,400	518,232
Dissolving pulp	141,221	123,772
Other sulphite pulp	116,459	107,046
Corrugating board	14,893	49,231
Other grades	47,892	15,357
Total Canada	814,865	813,638
TOTAL	2,614,944	2,653,800

The sulphite pulp production shown above includes tonnage shipped to the company's northern United States mills for their own use amounting to 53,334 tons in 1942 and 66,394 tons in 1941.

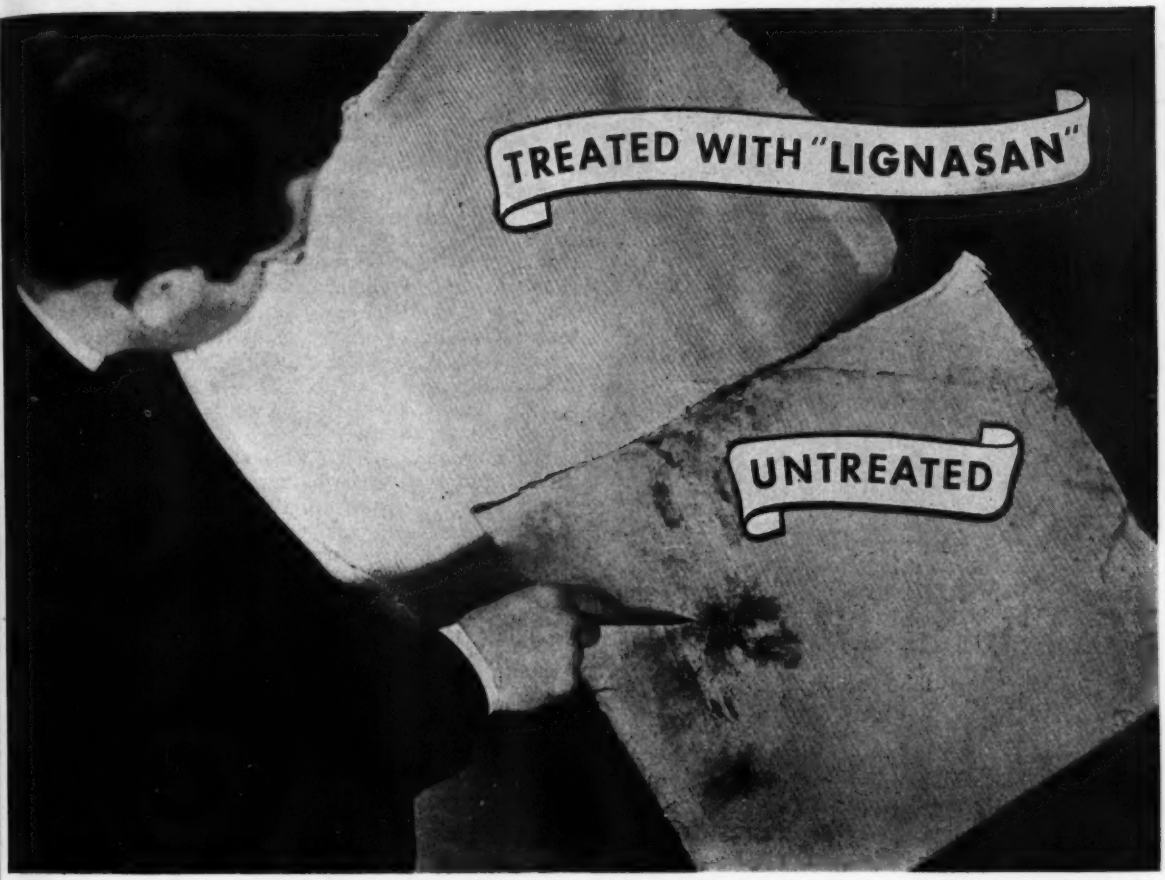
The tonnage figures in the above tabulation do not include the company's output of converted products, such as corrugated kraft shipping containers, paper bags, etc., manufactured for the most part from paper and board produced at the company's own mills. The paper and board utilized for such products is, however, included in the tabulation. The following is a summary of the tonnage of such principal converted products manufactured by the company and its subsidiaries:

	1942	*1941*
Corrugated shipping containers	125,709	158,039
Grocery and miscellaneous bags, etc.	67,167	76,546
Heavy duty multi-wall bags	40,616	39,198
Insulating board (Canada)	18,714	19,617

War Conditions

A nation at war requires sacrifices from all its citizens—from every individual and every corporation. These sacrifices your company expects to make. Taxes have been increased enormously. The government has curtailed both the production and use of many grades of paper and announcements

"Lignasan" Preserves Pulp at *Lowest Cost*



Effective method of combating bacteria, fungi and algae stains in laps and paper by purifying water and fibers with "Lignasan".

Because "Lignasan" is a powerful bactericide and fungicide amounts of 4 to 8 ounces per ton have prevented deterioration of stored wet laps over periods as long as fourteen months.

PULP PRESERVATION—Laps, rolls or slush pulp may be easily and inexpensively treated with "Lignasan". A simple perforated pipe applicator, equipped with a flow-control valve, suspended above the wet machine will apply "Lignasan" to adequately protect wet laps in storage against fungi, bacteria and algae. Slush pulp is protected against spoilage by simply mixing "Lignasan" with the stock.

SLIME CONTROL—"Lignasan" controls slime economically. From beaters, machine storage chest, and all connecting pipes to screens and machine wires, "Lignasan" fights slime bacteria, prevents stains, clogged screens, and torn sheets. Losses caused by shut-downs and man hours wasted in cleaning are kept at the minimum. A few ounces of "Lignasan" per ton are all that are required to do the job—thoroughly and efficiently.

GET FACTS TODAY

It takes less "Lignasan" to control bacteria and fungi in pulp and paper mills. Order your supply of "Lignasan" today. E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Department, Wilmington, Delaware.

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BACTERICIDE AND FUNGICIDE

BETTER THINGS for BETTER LIVING...THROUGH CHEMISTRY

from Washington indicate that further restrictions along these lines may be imposed.

Paper is a necessity in the conduct of any business; and the business of waging war is no exception. One product of the paper industry—dissolving pulps—goes directly into munitions of war as it is a raw material used in the manufacture of explosives as well as in the manufacture of rayon, paper and plastics. But for the most part paper's role in the business of war has been to expedite and assist. Transactions must be recorded, information must be transmitted, goods must be packed for shipment. In the latter field the war has in fact stimulated demand, since paper—plentiful and inexpensive—has been available to replace many materials that have become scarce.

Production Capacity by Grades

The following schedule shows the rated production capacity of the companies' mills by grades and the maximum rate at which capacity in each grade may be operated under the curtailment orders that have been issued up to the present time.

	Annual Productive Capacity Tons	Maximum Permissible Operating Rate Under Present Orders
UNITED STATES:		
Kraft board (unbleached)	1,040,175(a)(b)	Unlimited
Kraft wrapping and bag paper (unbleached)	197,650(a)(c)	85%
Bleached kraft paper	82,075(a)	85%
Bleached kraft board	50,250(a)	85%—100%
Unbleached kraft specialty papers	92,125(a)	85%
Total kraft board, paper and pulp	1,462,275(a)	....
Book and bond and groundwood papers	387,500	86%
Other papers	21,700	Various
Jute board	252,925(a)	Unlimited
Total United States	2,124,400	....
CANADA:		
Newsprint	670,800(d)	65%(e)
Dissolving pulp	161,200(f)	100%
Other sulphite pulp	49,600	100%
Total Canada	881,600	....
TOTAL	3,006,000	....

(a) On a 335 day basis. All others on 310 day basis.
(b) Kraft board capacity can also be used to produce unbleached kraft pulp.
(c) Certain kraft wrapping and bag paper capacity can also be used to produce unbleached kraft specialty papers.
(d) Part of the newsprint capacity can also be used to produce other sulphite pulp, corrugating board and other grades.
(e) Estimated.
(f) Part of the dissolving pulp capacity can also be used to produce bleached sulphite pulp for paper.

There is a possibility of further curtailment orders as the war progresses and of course demand for some products may not at all times be sufficient to permit operations to continue at the full permissible rate.

Newsprint

Since September, 1942, the Canadian newsprint industry has been controlled by the Canadian government through its War Time Prices and Trade Board. By reason of shortages of power and other wartime conditions, this Board considered it advisable to curtail and to allocate the production of all newsprint machines in Canada among all newsprint manufacturers.

Maximum selling prices are fixed for Canada by the War Time Prices and Trade Board, but since the United States is the chief market for the industry's products, the influence of prices fixed by the Office of Price Administration is paramount. In this respect the industry is greatly handicapped by insufficient recognition of increased production costs of newsprint aggravated by the curtailed rate of operation. There had been no advance in price since January 1, 1938 until March 1, 1943 when the ceiling price was increased $4.00 a ton. This is but partial resognition of increased costs and the Canadian subsidiaries are still manufacturing newsprint at a loss.

Disposition of Utility Interests

In November, 1942, the properties of Olcott Falls Company were sold to Bellows Falls Hydro-Electric Corporation for $200,000 cash, which subsequently was used to reduce the Olcott Falls Company's debt to the company. Since January, 1939, the stock and debt of Olcott Falls Company had been held by the Liquidating Trustees appointed for liquidating utility holdings of the former International Paper and Power Company and International Paper Company. In December, 1942, the Liquidating Trust was terminated. These transactions marked the end of the program of disposition of utility holdings begun in 1938.

Staff

To date a total of 5,788 members of the organization have been given military leave of absence to join the armed services of the United States and its Allies. The remaining members of the organization are being called upon to solve many new and difficult problems arising from war conditions. The board of directors and management of the company wish to take this opportunity of expressing their appreciation of the loyal services being rendered by each group.

Clarifies Waste Manila Rope

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 7, 1943—Restriction of the use of waste manila rope in essential paper products does not apply to any grade or type of paper containing waste manila rope manufactured prior to March 19, according to General Conservation Order M-294 as amended, issued by WPB.

The amendment to paragraph (c) releases paper inventories on hand prior to the issuance of the order, which otherwise would remain frozen and useless for permitted uses. It also clarifies certain items by deleting paragraph (a) (3), defining "Dealer", a term not used in the order; renumbering paragraph (a)(4) as (a)(3); and deleting a phrase in paragraph (e).

Hercules Opens Boston Office

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 12, 1943—The Hercules Powder Company has opened an office in the Statler Building. Wistar M. Williams, of the Industrial Chemical Division of the Papermakers Chemical Department, is resident manager. Homer C. Simmons, Jr., of the Cellulose Products Department, is New England sales manager and supervising manager of the office. Howard C. Bates is New England representative of the Synthetic Department, handling synthetic resins. Guy J. Rising, formerly resident manager, is to go to Pittsburgh, Pa., for special work in the office of the Hercules Powder Company in that city.

To Investigate Newsprint

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 14, 1943—The House of Representatives has approved the Halleck resolution to investigate newsprint curtailments already ordered, or ordered and held in abeyance, to determine if they were justified, or whether any ulterior purpose exists behind the proposed cuts.

The resolution will go into every phase of the newsprint situation, members of Congress promised. It was adopted after the House heard charges by Representative Schafer, of Mich., and others, that curtailments in effect and ordered were not justified by the supply situation.

"The newspapers of the country accepted without complaint—as a part of the war effort—a government directive cutting their supply of newsprint 10 per cent," Representative Schafer said in commenting on the resolution during House debate. "To newspaper owners that cut did not seem unreasonable. But lo and behold, we awoke one morning to find that an additional cut of 40 per cent was being contemplated.

"That proposed cut was so absurd and so ridiculously unnecessary from the standpoint of supply and availability of newsprint that it immediately cast light on the real motive, which was most assuredly not to aid the war by eliminating pulp waste and paper."

After a fight which resulted in defeat of the proposed 40 per cent cut, Rep. Schafer recalled, a modified order for an additional 10 per cent cut was agreed to.

"But—and weigh this carefully—" Mr. Schafer continued, "when adequate investigation was made and full light thrown on the question of supply and production of pulp and newsprint, it was found that even this additional cut of a maximum of 10 per cent could not be justified. It is now being held in abeyance.

"The brazenness of this maneuver," he said, will give Congress an opportunity to go into the entire subject. He indicated that the committee will welcome reports or information from American producing companies in a position to supply "the real facts."

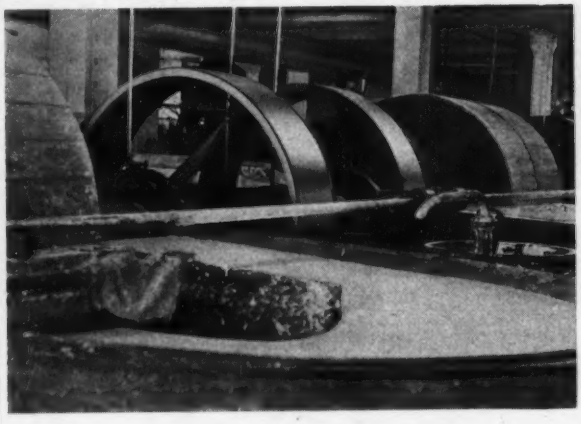
Issues Laboratory Handbook

Incorporating the fourth edition of Dr. H. P. Steven's "Paper Mill Chemist," "A Laboratory Handbook of Pulp and Paper Manufacture," has just been published by Longmans, Green & Co., 55 Fifth avenue, New York, at $10 a copy.

The 320-page text omits general elementary chemical analysis and is confined to papermaking and allied processes such as fuel and water. This book is not a complete text book on papermaking theory or practice. It is principally concerned with laboratory and control methods and presents sufficient explanatory matter to meet the usual requirements of the mill laboratory.

The contents include the function of a mill laboratory, fibrous raw materials and the preparation of half-stuffs; non-fibrous raw materials used in preparing half-stuffs, the recovery process and bleaching. Other chapters discuss beating, after processing, the physical, chemical and microscopical methods of paper testing, special testing methods, water and fuel. A subject index is included.

MORE PRODUCTION



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Performance records have proved that Rhoads TANNATE leather belts in paper mills mean continuous output at lower unit cost, increased machine speeds, lower operating costs and longer service life with fewer interruptions.

The unusual strength of TANNATE ant firm pulley grip keeps machines running smoothly at full capacity even under varying load conditions. High temperatures, machine oil and many weak chemicals have little effect on TANNATE. Treated to resist moisture, it carries nearly full load even when damp.

When properly installed, TANNATE requires little maintenance and will stay on the job 24 hours a day, seven days a week.

Try TANNATE in your mill for increased production, reduced costs and longer service life.

Write for a free belt length calculator. Figures belt length quickly and accurately.

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RHOADS Tannate WATERSHED LEATHER BELTING

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New York • Chicago • Atlanta • Cleveland

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending April 10, 1943

STOCKS

	High	Low	Last
A. P. W.	2¼	2⅛	2⅛
Armstrong Cork Co.	36½	34½	34½
Celotex Corp.	14¾	13	13⅛
Celotex Corp., pf.	88½	88¼	88½
Certain-Teed Products Corp.	6	4⅞	5¼
Certain-Teed Products Corp., pf.	62½	55¼	56
Champion Paper & Fibre Co.	20¼	19½	19½
Champion Paper & Fibre Co., pf.	104	102½	104
Congoleum Nairn Co.	21⅞	20¼	20¾
Container Corp. of America	22¾	19¾	20¾
Continental-Diamond Fibre Co.	14⅛	12¾	12¾
Crown-Zellerbach Co.	14¾	13	13¼
Crown-Zellerbach Co., pf.	90⅞	90¼	90¼
Dixie-Vortex Co.	13⅞	13¼	13¼
Dixie-Vortex Co.—A.	40	39	39¼
Flintkote Co.	19	17⅝	17¾
Flintkote Co., pf.	105½	102½	102½
Robert Gair	3½	3	3⅛
Robert Gair, pf.	12⅞	12½	12½
International Paper Co.	12⅜	10½	10⅞
International Paper Co., pf.	59	55¼	55¼
Johns-Manville Corp.	85¼	80	80¼
Johns-Manville Corp., pf.	....	....	....
Kimberly-Clark Corp.	29¼	27¾	27¾
MacAndrews & Forbes	25⅜	23¾	25⅜
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	35⅞	34	34
Mead Corp.	10¾	9½	9¾
Mead Corp., pf. A—6%	85	83¼	83¼
Mead Corp., pf. B—5½%	75	71	71
Paraffine Companies, Inc.	42½	40¾	40¾
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	13¾	12¾	12¾
Rayonier, Inc., pf.	28¾	28	28
Ruberoid Co.	25	23½	23½
Scott Paper Co.	40	38	39
Scott Paper Co., pf.	113	112½	113
Sutherland Paper Co.	30	29¾	29¾
Union Bag & Paper Corp.	11¼	10	10¼
United Paperboard Co.	5⅞	5	5
U. S. Gypsum Co.	70¼	67	67
U. S. Gypsum Co., pf.	....	....	....
West Virginia Pulp & Paper Co.	15⅞	15¼	15¼
West Virginia Pulp & Paper Co., pf.	108	107	107

BONDS

Abitibi Pulp & Paper Co. 5s '53	64½	64½	64½
Celotex Corp. 4½s '47	101¾	101	101½
Certain-Teed Products Corp. 5½s '48	99¾	98½	98½
Champion Paper & Fibre Co. 4¾s '50	....	....	....
International Paper Co. 6s '55	107	106¾	107
International Paper Co. 5s '47	103¾	103¾	103¾
Mead Corp. 3½s '53	....	....	....
West Virginia Pulp & Paper Co. 3s '54	104	104	104

New York Curb Exchange

High, Low and Last for Week Ending April 10, 1943

STOCKS

	High	Low	Last
American Box Board Co.	6⅝	6½	6½
Brown Co., pf.	....	....	....
Great Northern Paper Co.	34¼	32⅞	32⅞
Hummel-Ross Fibre Corp.	5¼	4¾	4¾
National Container Corp.	11	10½	10⅞
St. Regis Paper Co.	3	2⅝	2⅝
St. Regis Paper Co., pf.	134½	130	130
Taggart Corp.	4⅛	3¾	3¾

BONDS

American Writing Paper Co. 6s '61	91¾	91¼	91¼

St. Regis Co. Holds Annual Meeting

At the Annual Meeting of the Stockholders of St. Regis Paper Company held on April 9, at the office of the company, at Watertown, N. Y., the following directors were elected for the ensuing year:

J. O. Bulkley, T. H. Cosford, W. DeLong, W. K. Dick, W. J. Dixon, R. K. Ferguson, M. F. Ford, H. S. Lewis, H. E. Machold, C. R. Mahaney, R. B. Maltby, C. B. Martin, J. A. Quinlan, and W. H. Versfelt.

R. K. Ferguson, president of the company, presided at the meeting and advised stockholders that the business of the company and subsidiaries for the first quarter of 1943 showed a decline of approximately 25% from the first quarter of 1942 due to the shutdown of the company's kraft pulp mill at Tacoma, Wash., and the curtailed rate of operations resulting from the orders of the War Production Board.

A payment of $200,000 has been made on the company's bank loan during the first quarter of 1943 which leaves the term loan standing at $1,300,000 on March 31, 1943.

Mr. Ferguson reported to the stockholders present the important part the different divisions of the company are taking in the war program.

The Panelyte Division, manufacturing laminated plastic products, continues 100% on war work. This division is manufacturing baffles, pushrod housings and other airplane parts; also laminated plastic stock in sheets for lend-lease and for the United States Army and Navy for use in tanks, ships, submarines, etc.

The multiwall paper bag factories of the company are running at a high rate of capacity to supply the increasing demands for bags to take care of the many new commodity markets developed by reasons of the shortage of fabrics and curtailment of metals and wood for packaging.

The Machine Division in Oswego, N. Y., is being called upon to build a larger number of packaging and filling machines for use in connection with the multiwall valve bags in the new commodity markets. The use of these machines makes possible substantial savings of manpower, metals and fabrics. The machine Division is also manufacturing parts for recoil mechanism, bombsights and other items essential to the war effort.

In the Groundwood Paper Division of the company the war economy is demanding greater utilization of groundwood grades of paper in order to obtain the maximum amount of wood fiber from a unit of wood in contrast with papers using larger percentages of chemical wood fiber.

Price Brothers Co. Earns $2.43

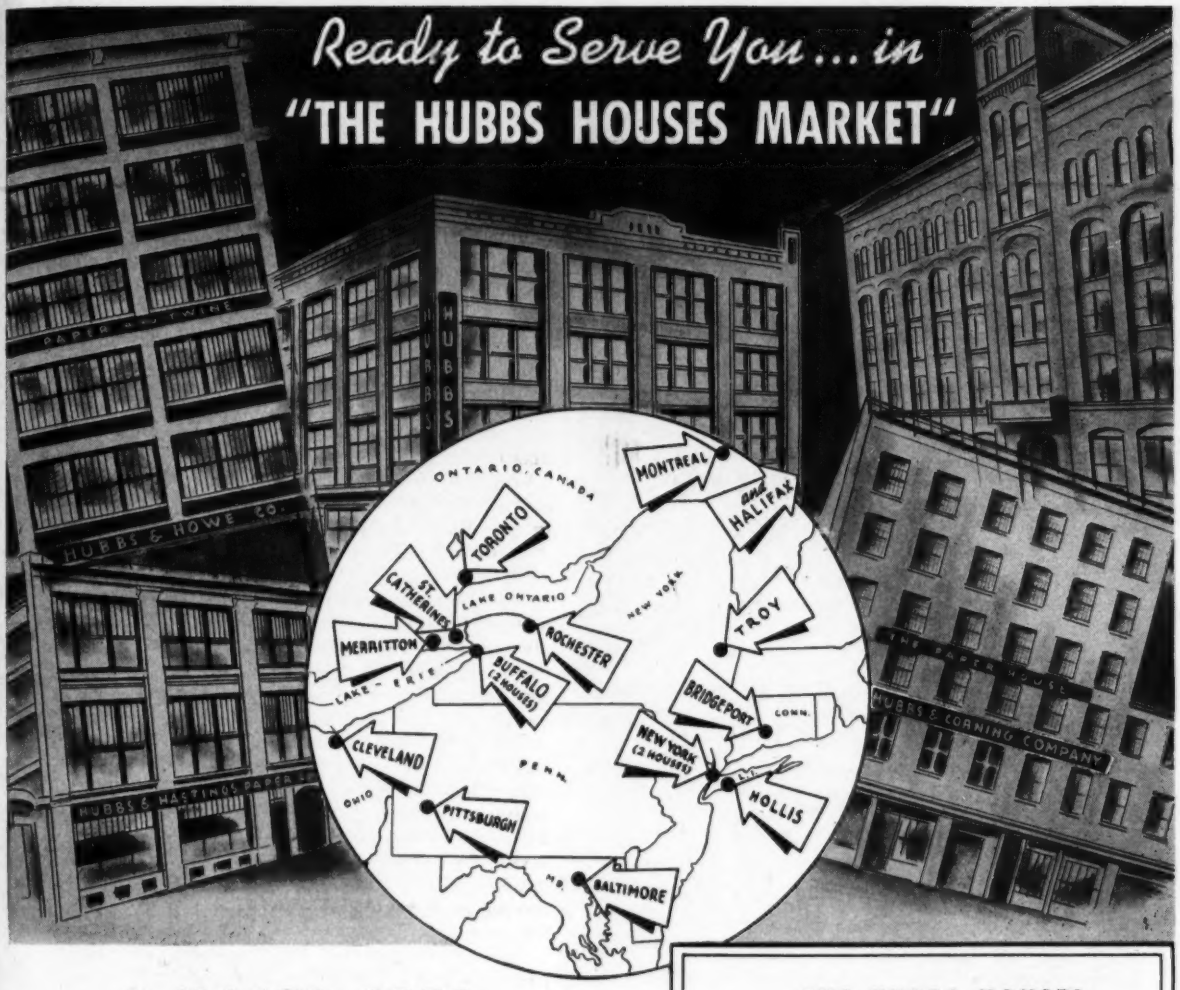
[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., April 12, 1943—The annual report of Price Brothers and Co., Ltd., for the year 1942, shows net earnings at $1,677,874 as compared with $1,784,147 in the previous year.

These earnings were equal, after preferred dividends, to $2.43 a share on outstanding common stock as compared with $2.62 a share in the preceding year. Deduction of $250,000 for contingency reserves left indicated earnings equal to $1.97 a share on common.

Gross income for the year was about $520,000 lower than the figure for 1941 at $5,232,415, but bond interest absorbed $47,000 less at $603,836; debenture interest over $41,000 less at $115,704, and tax provision $125,000 less at $1,125,000. Write-off to depletion was $165,000 lower than in previous year at $360,000. Net earnings before $250,000 write-off to contingencies were down only a little more than $100,000.

In the balance sheet a healthy expansion in net working capital and an improvement in cash position



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Recognized for its gigantic war-production accomplishments . . . destined to be of commanding importance in the *post-war* period . . . The Hubbs Houses Market deserves the most aggressive and well-regarded representation you can secure. Our long-established houses offer you over *400 years of combined merchandising experience* and a trained staff of *Paper Engineers* . . . versatile, service-minded, production specialists.

Mills looking for DISTRIBUTORSHIP that means LEADERSHIP are invited to investigate the Hubbs Houses. Please address inquiries to the Hubbs House that serves your locality.

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HUBBS & CORNING COMPANY
BALTIMORE MD.

HUBBS & HOWE COMPANY
BUFFALO, NEW YORK

HUBBS & HASTINGS PAPER CO.
ROCHESTER NEW YORK

CHARLES F. HUBBS & COMPANY
BRIDGEPORT, CONN.

INTERSTATE CORDAGE & PAPER CO.
PITTSBURGH, PA.

THOMAS J. NAGLE PAPER CORP.
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Suitable for ALL types of paper ranging from thin printing papers and waxing tissues to coated book and magazine stocks.

UNITANE O—110 was especially developed for paper pigmentation. Its excellent dispersion in water promotes good retention and excellent sheet formation. As a component of the beater furnish, it produces *whiter* sheets of *great brilliance*, and superior printing qualities.

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DIVISION OF INTERCHEMICAL CORPORATION

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SALES OFFICES IN PRINCIPAL CITIES

are revealed. With current assets up $1,750,000 at $19,443, and current liabilities lower by $350,000 at $3,815,998, net working capital is shown up over $2,100,000 during the year at $15,627,773.

Brown Co. Plan Completed

PORTLAND, Me., April 10, 1943—The plan of reorganization of the Brown Company, confirmed by Judge John A. Peters of the United States District Court in October, 1940, was declared consummated in a final decree in the reorganization proceedings signed Monday by Judge Peters.

The decree accepts the report of the trustees and the accountants employed by them to present a statement of the company for the fiscal-year ended November 29, 1941; ratifies the actions of the trustees since their appointment by the court and discharges the sureties on their bonds; discharges all debts and liabilities contracted by the company before December 1, 1941, except debts expressly assumed by the company as part of its reorganization plan; terminates all rights of stockholders except those provided in the reorganization plan; enjoins creditors from instituting suits based on claims existing before December 1, 1940; orders all holders of securities in the company prior to reorganization to surrender them within five years, or these shall become the property of the reorganized company, free and clear.

The court, under the decrees, reserves the right to appoint a successor trustee or trustees under the voting trust agreement with the company and Charles Francis Adams, T. Jefferson Coolidge, both of Boston, and Ernest M. Hopkins of Hanover, N. H., who have been serving as trustees.

Continental-Diamond Earns Less

The Continental-Diamond Fibre Company and wholly owned domestic subsidiaries for 1942, report net profit from operations, after provision of $1,653,500 for Federal income and excess profits taxes, was $741,006, equal to $1.65 a share. After appropriation of $100,000 to reserve for contingencies, net profit carried to surplus account was $641,006, or $1.42 a share. Net profit from operations in 1941 was $895,860, or $1.99 a share after $1,393,200 tax charges. After deducting $191,370 write-off of French subsidiary and $100,000 appropriation to reserve for contingencies net profit carried to surplus account $604,481, or $1.34 a share.

Edward Anderson to be Director

SAN FRANCISCO, Cal., April 12, 1943—Edward Anderson has been nominated for election to the directorate of Puget Sound Pulp and Timber Company at the annual meeting scheduled for April 20, it was learned last week. Mr. Anderson is president of the Olympia Harbor Lumber Company and Bridgeport Lumber Company and vice president of the Tumwater Lumber Mills.

Container Corp. Votes Dividend

Meeting in Chicago April 5, the board of directors of the Container Corporation of America declared a dividend of 25 cents per share payable May 20, 1943 to stockholders of record May 5, 1943.

Paper and Cordage Men Meet

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., April 12, 1943—George Corse, president of the Philadelphia Paper and Cordage Association, announces that Thomas B. McCabe, president of the Scott Paper Company, will address the members of the association at its luncheon meeting on Friday, April 16, in the Arcadia Restaurant. Mr. McCabe who is also chairman of the Board of the Federal Reserve Bank, and a speaker of unusual significance, will talk on "Post War Planning." His widespread industrial connections and his service on the Business Advisory Council of the Department of Commerce, as Deputy Lend-Lease Administrator, and member of the U. S. Committee of the Inter-American Development Commission peculiarly qualifies him to speak on Post War Planning as it is at the present time. In addition to key men in the paper and cordage field, there will be leaders of local banking, industrial and educational institutions in attendance.

W. J. Culverhouse of Fort Howard Paper Company, assures every one who turns out at the association's golf tournament on Wednesday, April 21, a full day of enjoyment and entertainment. Dick Richards of Buffalo Envelope Company, and chairman of the Entertainment Committee, is host. The tournament will be held at Roxborough County Club, and the play will be for the Howard Paper trophy and for Jack Shinners' trophy for the 72 Hole season medal play. There will be food and refreshments available, caddies and golf clubs for hire. The green fee is very nominal—$1.00—and those who are planning to come by train will be met at all three trains and taken to the golf course. Mr. Culverhouse requests that all those in a position to use their cars kindly call him at Kingsley 2045, so that arrangements can be made to pool rides and thus take care of extra members. Trains leave Reading Terminal at 11:52 a.m.; 12:20 p.m. and 12:52 p.m. and arrive at Miquon Station in time to start the play. Return trains run on a frequent schedule from 5:00 p.m. until midnight. Those desiring to come by bus will take the "R" bus which leaves Broad Street and Hunting Park avenue every 11 minutes.

First Quarter to Show Decreases

Earnings for the first quarter of 1943 for most of the leading paper companies will be well under those for the corresponding period of last year, according to the *Wall Street Journal*. This will, of course, reflect curtailed operations, substantially higher costs and selling prices. Some relief from the pinch on profits caused by rising costs of labor and materials and the ceilings on the prices for paper products will evidence itself in this quarter through the action of the O.P.A. in granting increases in ceiling prices for certain types of kraft paper and paperboard which became effective April 1, as well as in the rise in the newsprint price ceiling by $4 a ton, which became effective on March 1. Generally, however, the industry, while hailing the O.P.A. action as just recognition of its problem, feels that the increases granted will not nearly compensate for the rise in costs which has taken place since the freeze in prices and which is still unhalted. In addition to these factors, the industry faces the possibility of further curtailment in production as a result of the tight situation in pulpwood supplies.

Triple-chain woven wire cloth, magnified about 32 times.

It is not easy to develop a product which will be used again and again — which is to be *standardized.* It is possibly even more taxing to have to evolve a *special* product — one which must be equally right, but will never be able to prove its case from a world of evidence. The triple-chain weave shown above is just such a specialty. It is comparatively delicate, fragile; calls for engineering with a very fine touch. Distinguished by extreme flexibility, a unique and smooth papermaking surface and good drainage characteristics, it has won a wide, lasting acceptance in the manufacture of certain grades of specialized tissues.

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Lindsay **WIRES**
FOR PAPER MILLS

Eastern Pulpwood Prices

WASHINGTON, D. C., Apr. 12, 1943—With the issuance of specific dollars-and-cents maximum prices for pulpwood in Maine, Vermont, New Hampshire and New York, the Office of Price Administration brought the last of the major pulpwood areas in the country under price control.

Today's regulation covers pulpwood produced in the four states and also pulpwood, other than Canadian, produced elsewhere but sold in these states.

Ceilings for rough wood are established at a level at which substantial quantities of rough wood have been moving in the current season. In determining ceiling prices for peeled wood, prices at the close of the rough wood season and the customary differentials between peeled and rough wood have been taken into account.

Today's action follows a 60-day temporary freeze of pulpwood prices in the Southeastern Area and revision of maximum prices for pulpwood produced in the Lake Central area. Pulpwood prices in the Northwest (the other major producing area) are governed by Maximum Price Regulation 161 (West Coast Logs).

Pulpwood originally was exempted from the General Maximum Price Regulation. OPA explained that the gradual establishment of ceilings completed today was made necessary by the effect of rising pulpwood prices on the prices of products made from pulpwood. These products are chiefly woodpulp and newsprint but include also a variety of finished paper and paper products.

Today's Regulation No. 361 (Pulpwood Produced in or sold into the States of Maine, Vermont, New Hampshire and New York) effective April 12, 1943, establishes ceilings for rough, peeled and rossed pulpwood, with normal differentials observed.

Existing market levels were taken as a basis for the new ceilings because lower maximums would endanger the available supply of pulpwood, OPA said. In arriving at the new ceilings, the industry was consulted, and consideration was given to prices prevailing in October, 1941, and to subsequent increases in costs.

Maximum prices are now established on a zone basis, the wide variation of costs and prices within the region making different price ceilings necessary. There are four zones, and five different species of pulpwood, spruce and fir, hemlock, poplar, northern hardwoods and pine. The customary differential for peeled wood is maintained in all four zones. A differential of $1.00 over peeled wood is allowed for sales of rossed wood in each of the four zones into which the region has been divided.

The new ceilings per cord f. o. b. car, are:

TABLE I

Species and condition	Zone 1—Maine	Zone 2—New Hampshire, Essex Co., Caledonia Co., Orange Co., Washington Co., Windsor Co., Vermont	Zone 3—Franklin Co., Orleans Co., Chittender Co., Lamoille Co., Vermont	Zone 4—Addison Co., Rutland Co., Bennington Co., Windham Co., Vermont and State of New York
Spruce and fir:				
Rossed	15.25	16.75	19.00	20.50
Peeled	14.25	15.75	18.00	19.50
Rough	12.25	13.75	15.50	16.50
Hemlock:				
Rossed	14.00	15.00	15.25	14.75
Peeled	13.00	14.00	14.25	13.75
Rough	11.00	12.00	12.25	11.25
Poplar:				
Rossed	13.50	14.00	14.00	14.00
Peeled	12.50	13.00	13.00	13.00
Rough	10.50	11.00	11.00	11.00
Northern hardwood:				
Rossed	14.50	15.50	15.75	14.75
Peeled	13.50	14.50	14.75	13.75
Rough	11.50	12.50	12.75	11.25
Pine:				
Rossed	13.50	14.00	14.00	14.00
Peeled	12.50	13.00	13.00	13.00
Rough	10.50	11.00	11.00	11.00

Differentials allowed in these ceilings are:

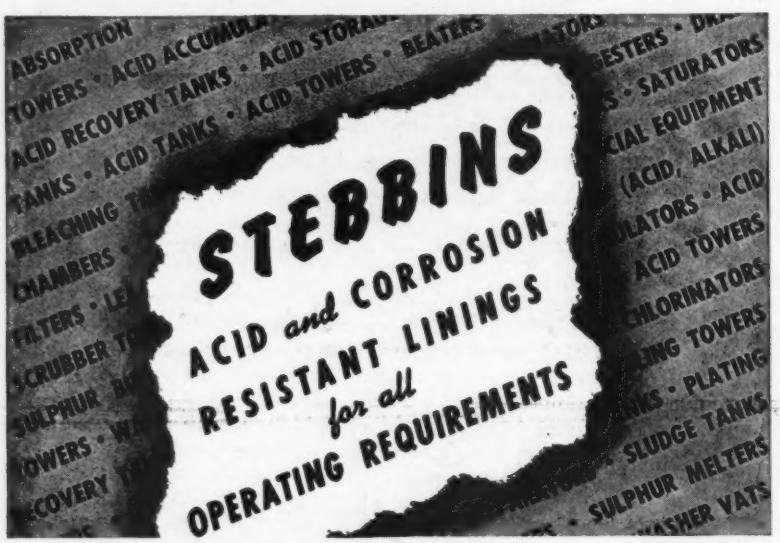
1. When the pulpwood is delivered at streamside in Zones 1 and 2, the only sections in the Northeastern region where market wood is driven to the mills in streams, ceilings are 75 cents per cord below the f. o. b. car prices for corresponding species and conditions of wood.

2. When the pulpwood is delivered at roadside, ceilings are $2 per cord less than corresponding f. o. b. car prices, in Zones 1, 2, and 3; in Zone 4 the same differential of $2.00 per cord below the f. o. b. car price is permitted for all species except the spruce and fir mixture; a three-dollar differential has been maintained between car and roadside price for spruce and fir wood in recognition of the longer hauling distances involved.

3. When the pulpwood is delivered by truck to the mill, ceilings are $1 per cord higher in Zones 1 and 2, and $2 per cord higher in Zones 3 and 4.

4. Contract adjustments up to $1 per cord higher than the maximums in the table.

5. For dealer allowances $1 per cord above maximums in the table.



STEBBINS experience over a period of 58 years in the Pulp and Paper Industry has covered almost every kind of lining problem. The wide variety of equipment designed by STEBBINS during this period for successfully handling acid, alkali and corrosive liquids, gases and vapors ranges from Acid Accumulators to Washer Vats and from Pickling Tanks to Acid Towers. Consult us today on your lining and tank problems.

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Fix Prices on Plates

WASHINGTON, D. C., April 14, 1943 — Specific dollars-and-cents maximum prices for manufacturers of paperboard plates and dishes, molded wood pulp plates and dishes, wood dishes, fiber spoons and forks, wood spoons and forks and liquid-tight containers were established today by the Office of Price Administration.

Ceilings for distributors, including retailers, on these six lines continue to be governed by the General Maximum Price Regulation, which formerly controlled the manufacturer levels also on all the products except liquid-tight cylindrical containers. The latter previously were under Maximum Price Regulation No. 129 but are removed through Amendment 16. Prices to consumers will be unchanged by today's action.

In most instances prices are now specified in Maximum Price Regulation No. 359 (Certain Converted Paper Products), effective April 12, 1943, will show no change from previous ceilings. The base period used is the same as in Regulation No. 129, covering many paper products, namely October 1 to 15, 1941. Prices of manufacturers on most of the products formerly controlled by the General Maximum Price Regulation at March levels showed no change between October, 1941, and March, 1942.

In accordance with industry practice, the specific prices listed are for one zone, with differentials provided for shipments to points outside. Quantity discounts are provided in all prices set in the new regulation. The listed ceilings for liquid-tight cylindrical containers are for sales to distributors, and it is specified that either manufacturers or distributors may add specified percentages to the maximums on sales to consumers.

Swedish Exports Decline

Swedish wood pulp exports showed a marked decline in 1942 because of domestic requirements as a substitute for other fuels curtailed by the war, according to a report to the Department of Commerce.

Last year about 143,000 tons of rayon pulp, 43,000 tons of sulphate pulp and about 35,000 tons of kraft spinning paper were sold to Germany, which shipments were carried for the most part in German bottoms.

Rayon pulp sold to Italy amounted to between 100,000 and 150,000 tons, largely shipped in Swedish and Finnish carriers.

Paul Revere was skilled as a gold and silversmith. He became one of New England's most celebrated engravers. But for Longfellow's popular poem, his reputation for fine craftsmanship might have exceeded the fame of his midnight ride on "the 18th of April — seventy-five."

Among the connoisseurs of hand-wrought silver or of engraving his reputation as an artizan is still secure. Some of his descendants now live in Canton, Massachusetts, where, with the same spirit of fine craftsmen, good paper-makers' felts are made by DRAPER.

For reliability of material and workmanship specify **DRAPER FELTS.**

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PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger
EDITOR

Vol. 116 April 15, 1943 No. 15

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

American Pulp and Paper Mill Superintendents Association, Twenty-fourth Annual Convention, Commodore Hotel, New York, June 15-17.

COOPERATION IN INDUSTRY

There is a reasonable expectation that from the global conflict now spreading wide destruction to even some of the remote recesses in the world, better balanced economic and social orders may ultimately be established; that the world in the future will be a better place for all mankind. Industry in some form must supply the warp and woof of this realization, for a better life for all is a problem that must be worked out rather than dreamed about. One effective means of making more substantial progress in this direction is for a more complete cooperation between management and labor. The industrial progress of this country in particular has for many decades indicated this cooperative trend. It is sometimes difficult to reconcile apparent conflicting forces and to view them both as contributing in an important degree to industrial and social progress. This trend is more plainly defined today, however, and indicates that a better balance is emerging in the relationship between management and labor or employer and employee.

Suggestions for effecting this balance were embodied in the report of the National Resources Planning Board and in the 48-page committee report issued by the National Association of Manufacturers. The committee of the N.A.M. made the following pertinent recommendations to management:

(1) Business management should see that goods and services are made available at fair prices. (2) Avoid, as far as possible rigid, inflexible prices and rigid, inflexible costs. (3) Restore competition, now restricted or eliminated as a result of the war. (4) Provide a fair wage determined with due regard to the nature, quantity and quality of the work. (5) Maintain good working conditions, including personal conveniences. (6) Adopt every effective way of accomplishing stabilization of employment. (7) Encourage free interchange of ideas between management and employees in all matters and company policies of mutual interest, such as wages, hours, and conditions of employment. (8) Encourage employees to recognize that they are a part of the enterprise. (9) Avoid over-capitalization or excessive financing. (10) Provide for management research. (11) Carry on research which will increase productivity to permit lower unit costs of production and lower prices to consumers. (12) Seek to lower distribution and service costs. (13) Recognize that no company is too small to carry on or participate in production research and development work. (14) Cooperate in analysis of economic problems affecting the ability of industry to provide jobs. (15) Review all company insurance policies. (16) Prepare plans for retraining employees now engaged in war production work and soldiers returning to industry. (17) Develop products to make them suitable for foreign distribution.

The committee's program for sound labor development included recommendation of collective negotiation and consisted of the following eleven points: (1) Monopolistic practices in labor are as harmful as in manufacture or distribution. (2) Basic purpose of legislation designed to control wages and hours should be social, not economic. (3) Fixation of maximum wages by law undesirable during peace time in all instances. (4) Greatest fairness to employees is result of offering them full opportunity for advancement. (5) Necessity of work training and retraining for returning service men and workers leaving war production jobs. (6) Basic for selection, retention, and promotion of employees should be ability, but that, where other facts are equal, length of previous service should be a governing factor in retention and promotion. (7) Employees have right to represent themselves in dealing directly with employers. (8) Employees have an equal right to join or not to join a labor organization. (9) Labor unions should be held to a responsibility equal to that of business. (10) While employees possess a right to quit work, either individually or collectively, they have no right to prevent others from working and no right to intimidate customers. (11) Collective negotiation between employers and employees should be used for the purpose of finding the best possible and the most just solution of their mutual problems.

In its summary of conclusion the report said in part: "Prosperity can be attained however, only if every section of the country, every part of our economic and social organization, and all of us as individuals work together and each expects in return only that share in such prosperity which is commensurate with his contribution." In the foreword to the report, William P. Witherow, chairman of the reporting committee, said: "No one knows when the war will end, or the precise degree of the victory the United Nations will win, or the post-war economic status of the war participants. It follows that it is impossible to detail the world situation when the war ends and, therefore unwise, even if not impossible,

to now present a plan saying precisely how post-war problems should be met. It does not follow, however, that we should give no thought to such problems and their solution, because, regardless of the conditions that will be faced in the post-war period, there are some basic principles that must govern if the problems are to be successfully solved. As a nation we were unprepared for war; we should not be unprepared for peace.

Institutes Old Age Benefit Plan

AUGUSTA, Me., April 10, 1943—A company retirement plan providing for old age benefits was announced by Anton M. Lund, general manager of the Kennebec Pulp and Paper Company at a joint meeting of the paper making brotherhoods.

The plan as outlined by Mr. Lund to the group of over 150 employees sets up a fund from company profits to provide retirement payments to employees who have attained 65 years of age if a man, and 60 years of age if a woman.

The fund was set up by the company in September, 1942, but this is the first official announcement.

Besides retirement benefits, payment is also made in case of sickness or disability that makes it impossible for the participant in the plan to continue work. In case of the death of an employee total payment of all credits is made to a beneficiary or estate.

"This plan allows employees a direct participation in the profits of the company whenever profits are adequate," Mr. Lund said. "The amount the company pays into the plan is determined by the amount of business we do."

Figures released Sunday disclosed that the company has already paid more than $118,000 into the fund.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1943		Corresponding Weeks—1942	
February 27	90.7	February 28	104.5
March 6	89.5	March 7	102.7
March 13	89.8	March 14	101.9
March 20	88.4	March 21	103.6
March 27	89.7	March 28	103.4
April 3	*88.2*	April 4	102.2

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1942	104.5	103.9	102.9	100.4	95.3	87.4	75.8
1943	87.5	88.9	*89.4*	....	....	....	....

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1942	80.8	82.8	90.6	86.9	80.1	90.4
1943	....	....	....	....	....	....

COMPARATIVE YEARLY SUMMARIES

	1936	1937	1938	1939	1940	1941	1942	1943
Year to Date..	76.2	89.3	67.2	79.7	85.7	89.2	103.6	*88.6*
Year Average..	80.4	79.8	71.5	83.4	85.6	97.4	90.4	...

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1937	83	89	89	91	88	80	69	77	72	70	57	47	75
1938	56	63	63	60	60	59	59	60	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	82	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	75	76	81	82	77	84
1943	86	88	*94*	..	..	..	..	..	..	..	..	..	..

Week ending Feb. 27, 1943—94
Week ending Mar. 6, 1943—93
Week ending Mar. 13, 1943—93
Week ending Mar. 20, 1943—92
Week ending Mar. 27, 1943—95
Week ending Apr. 3, 1943—95

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

LET WITCO CARBON BLACK NO. 11 HELP YOU, TOO

WITCO CARBON BLACK NO. 11 is a black especially produced for use in the making of black papers, and has advantages that save both time and money in application. A pellet black of the dustless type, it is cleaner than the uncompressed blacks ordinarily used in paper and can be more easily incorporated into the beater. These are factors that help you increase the efficiency of your production and at the same time improve the quality of your black papers. Write, wire or phone today for samples of WITCO CARBON BLACK NO. 11.

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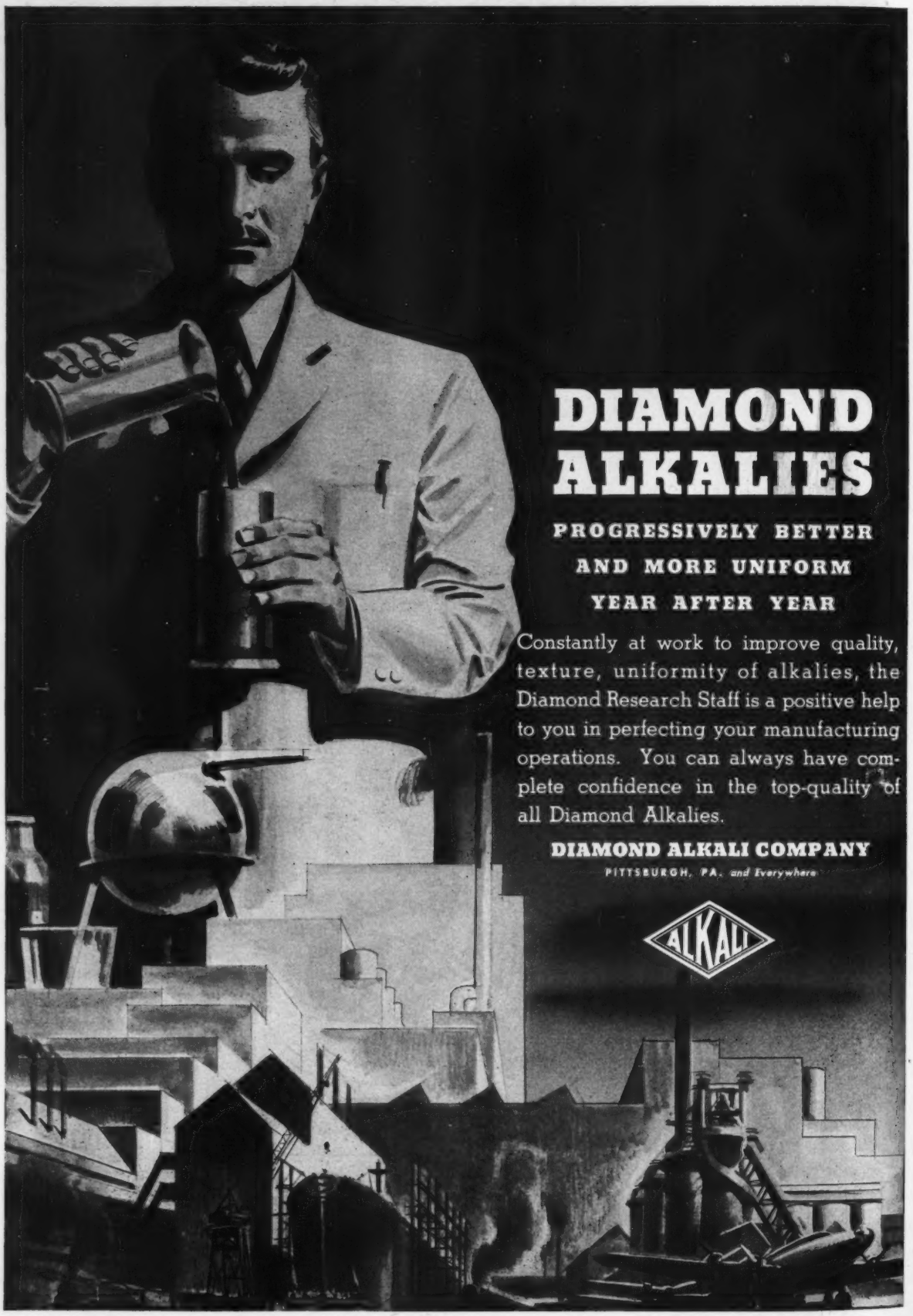
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Section of the
TECHNICAL ASSOCIATION
OF THE PULP & PAPER INDUSTRY

Edited by R. G. Macdonald, Secretary

Pipe and Tube Materials Survey in Sulphate Pulp Process*

By S. B. Jones[1]

The Materials of Construction Committee of the Engineering Division of the Technical Association of the Pulp and Paper Industry appointed the Piping Materials Subcommittee to investigate the problem of the industry in connection with the conveyance of chemicals, vapors, pulp suspensions, and other fluids. It was decided to make a survey of the durability of materials used in the various operations of sulphate pulpmaking in conjunction with one covering packing materials (reported previously). A plan of procedure was developed with a form consisting of questions, to be applied to each operation as shown in the Fig. 1.

Application was made to and approved by the TAPPI research appropriations committee for funds to cover the expenses of the survey made by Vincent Waters, Technical Assistant to the Secretary of TAPPI.

Many plants were surveyed and other plants submitted the data by mail. It was developed that many plants in spite of their relative newness do not keep active and easily accessible records of the materials of construction, maintenance, and costs.

These facts therefore obviated the possibility of producing the type of engineering report that the mills' capital investment, maintenance costs, and production requirements would seem to warrant.

The survey covered the information reported by 18 plants, including one in Canada.

Typical Installations

Waters reported (Waters, Vincent F., "Pipes, Pumps, Packing, and Valves in the Pulp, Paper, and Paperboard Industry," *Paper Trade J.* 113, No. 22:89-104 (Nov. 27, 1941) that the cost of piping for a typical sulphate mill (300 tons) is about $300,000 when such piping on the whole contains no nickel chromium, or combination of these alloy elements. If the chromium-nickel steels had been utilized in the lines where they would prove more effective than ordinary steel, the cost would be somewhat higher but more than balanced by the reduction in maintenance costs and noninterrupted production.

A typical kraft pulp and paper mill of 300-ton capacity used over 3200 brass valves of the check, globe, gate, and cock types (over two thirds were gate type); over 275 cast steel valves up to 18 inches; over 375 forged steel valves; nearly 8000 steel fittings; nearly 40,000 iron fittings; and various miscellaneous materials in its construction. The total number of valves required was over 5200. The pipe required consisted of about 190,000 feet of standard steel, 12,000 feet of extra strong, 10,000 of galvanized steel, 4500 feet of extra strong seamless steel, 285 feet of spiral welded steel, and other pipe totaling about 220,000 feet. The pipe weighed nearly 700 tons. These materials cost about $300,000 or about $1000 per ton of capacity. The use of stainless steel, Monel, CNi, and other alloys to a greater extent for this mill would have increased the first cost but in some cases the increased cost would be justified by obtaining longer life and lower maintenance costs.

The figures for the kraft mill do not include underground piping, safety railing, and certain other outside piping. An example of the cost of major lines is as follows: Steam, $15,000; digester room (four digesters), $24,000; liquor lines, $33,000; boiler, $17,000; drips, $16,000; feed lines, $18,000; fuel oil lines, $38,000; machine room (one paper machine), $15,000; cork siding, $12,000. There is no bleach plant included in the kraft mill figures; in other words, the plant manufactures kraft pulp and paper.

The centrifugal pumps required for a typical 300-ton kraft pulp and paper mill number about 150; total cost of pumps, motors and controls is about $150,000, and the total weight of pumps, motors, and controls is about 250,000 pounds. These figures are considered accurate, because they are based on engineers' estimates for pumping requirements in such a plant.

Maintenance Record Keeping

Simple card records of installations and maintenance as already kept by some mills would give the engineer and maintenance staff a running story of the effectiveness of certain material used for piping, pumps, and valves which would lead to the reduction of costs and more efficient operation. Each pump installation should have a separate card for the recording of important data including physical and chemical properties of the liquids handled, character of pump, speeds, maximum average flow, packing maintenance data, repairs, etc. Because the number of pumps in the average plant does not exceed 200, record keeping would not be a burden, and an average evaluation of each card at appropriate

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times would tend to promote the most effective selection of materials for any specific condition.

Pipe and Tube Life

Figure 1 is a typical flowsheet of a sulphate pulp mill. The encircled numbers indicate the various phases of the operation of pulpmaking. These phases are described in the legends and used in the balance of this report.

1. *Digester Circulating Sulphate Liquor.* Wrought iron and steel were the materials reported in this service with the latter more common. The range of life was from 3 to 15 years; most installations lasted from 4 to 5 years. Low-temperature liquor of 140° F. as compared with the average of 340° F. was associated with exceptionally long life. Scale was deposited by the liquor in about one half the cases, but such scale apparently did not affect pipe life. There was no evidence that the flow rates had any particular influence on pipe life.

2. *Diffuser to Dump Chest—Brown Stock.* Steel is the only material reported being used. It has had a life range of from 2 to 10 years. There is no indication of the factors determining pipe life from the data supplied.

3. *Washed Stock to Process—Brown Stock.* Steel is the material predominately used in this service, with some wrought iron, and one mill reporting wood. The average life is about 10 to 15 years. Corrosion is evidently not a serious problem.

4. *Weak Spent Wash Liquor Storage to Dump Chest—Weak Black Liquor.* Steel predominates in this service according to the report, but some wrought iron is used. Life of the pipe is from 6 to 15 years, frequently over 10 years. Corrosion is evidently not a serious problem.

5. *Strong Spent Liquor Storage to Eveporator—Strong Black Liquor.* Steel is reported more often in this service, but wrought iron is used also. The average life is from 5 to 15 years, with one case of unusually short life of one year. In the latter case the only connected factor appeared to be an unusually high flow rate through a 3-inch pipe with deterioration most rapid at bends. In other mills the pipe size for this rate of flow was above 4 inches.

Deposition of scale was rare.

6. *Steam Condensate form Evaporator—Water Contaminated with Black Liquor.* The most commonly used material in this service appears to be 3-inch steel pipe, with some reports of wrought iron, and of steel and wrought iron in sizes from 1½ to 6 inches. The average pipe life is from 1 to 10 years, and with no apparent connection between service conditions and life. Failures in one case occurred at bends, one at joints, and at miscellaneous areas for all others. No scaling was reported.

7. *Evaporator Effect Transfer—Weak Black Liquor.* The usual material reported in this service is steel pipe, in sizes from 2 to 12 inches, with one user of wrought iron reported. Piping life extends from 1½ to 6 years. Failures occur in no specific areas.

Scaling is evidenced only at the one mill reporting longest service life. Other service conditions appear to have no direct bearing on life.

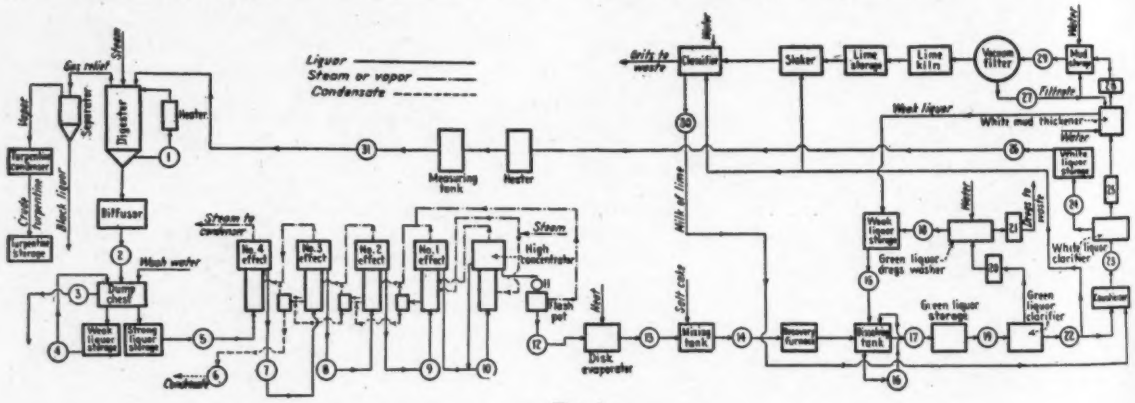

FIG. 1

Typical Fluid Flow in Sulphate Pulping Process

Item	Service	Liquid
1	Digester Circulating	Sulphate Liquor
2	Diffuser to Dump Chest	Brown Stock
3	Washed Stock to Process	Brown Stock
4	Weak Spent Wash Liquor Storage to Dump Chest	Weak Black Liquor
5	Strong Spent Liquor Storage to Evaporator	Strong Black Liquor
6	Steam Condensate from Evaporators	Water Contaminated with Black Liquor
7	Evaporator Effect Transfer	Weak Black Liquor
8	Evaporator Effect Transfer	Intermediate Black Liquor
9	Evaporator Effect Transfer	Concentrated Black Liquor
10	High Concentrator Circulation	Concentrated Black Liquor
11	Concentrated Black Liquor to Flash Pot	Black Liquor
12	Flash Pot to Disk Evaporator	Heavy Black Liquor
13	Disk Evaporator to Mixing Tank	Heavy Black Liquor
14	Recovery Furnace Spray Pump	Black Liquor and Salt Cake
15	Weak Liquor Storage to Dissolving Tank	Weak White and Green Liquor
16	Dissolving Tank Circulating	Raw Green Liquor
17	Dissolving Tank to Green Liquor Storage	Raw Green Liquor
18	Dregs Washer to Weak Liquor Storage	Weak Green Liquor
19	Green Liquor Storage to Clarifier	Raw Green Liquor
20	Dregs from Clarifier to Dregs Washer	Sludge
21	Dregs from Washer to Waste	Sludge
22	Green Liquor Clarifier to Causticizer	Clarified Green Liquor
23	Causticizer to White Liquor	Raw White Liquor
24	White Liquor Clarifier to White Liquor Storage	Clarified White Liquor
25	White Liquor Clarifier to Thickener	Sludge
26	White Liquor Storage to Heater and Measuring Tank	White Liquor
27	Vacuum Filter Filtrate	Weak White Liquor
28	White Mud Thickener to Mud Storage	Sludge
29	Mud Storage to Filter or Waste	Sludge
30	Classifier to Causticizer	Milk of Lime
31	Measuring Tank to Digester	White Liquor

8. *Evaporator Effect Transfer—Intermediate Black Liquor.* Steel is most commonly used material, with two reports on use of wrought iron and one of 5% nickel steel. Common sizes are from 2 to 6 inches, with some reports on the use of 1½ to 8 inches. Average life is from 1 to 6 years. Failures are reported at the bends, joints, pipe ends, and in scattered areas.

Scaling is reported only in two cases where better than average pipe life is obtained. No evident relationship appears to exist between service life and other operating conditions.

9. *Evaporator Effect Transfer — Concentrated Black Liquor.* Steel is usual material, with two mills reporting wrought iron. Average life is from 1 to 15 years, with wrought iron having shorter life than steel. Corrosion is reported at bends and joints, but mostly uniform.

Two mills report scaling. Longest life occurs at mill using lowest temperature (118° F.) and lowest velocity (50 to 150 g.p.m.). Other service conditions appear to have no direct bearing on service life.

10. *High Concentrator Circulation—Concentrated Black Liquor.* Both steel and wrought iron are reported in this service, with one mill using 18-8 stainless steel. Average life is 1 to 15 years with one mill reporting life of steel pipe only ¼ year.

Only one mill reports scale, with ultimate failure in joints, whereas other failures occur in pipe threads bends, and at scattered points.

Mill reporting longest service life (15 years) for steel has lowest rate of flow and intermediate percentage sulphidity. Other factors seem to have no direct influence.

11. *Concentrated Black Liquor to Flash Pot—Black Liquor.* Steel is usual material reported with some users of wrought iron, and one reporting use of cast-iron pipe. Average service life is exceptionally short—cast iron only ½ year, wrought iron from 7 months to 7 years, and steel from 1 to 3 years. Failures are reported in bends, flanges and threads, and for the average, at scattered points.

No scaling reported. No direct relationship exists between service conditions and life, with the exception that cast iron is used at relatively low flow rate and temperature.

12. *Flash Pot to Disk Evaporator—Heavy Black Liquor.* Steel is most common material, with a few reports of wrought iron, and one mill using cast iron. Average service life is nearly 10 years, indicating relatively mild corrosion for most mills using steel and wrought. Cast-iron pipe gave relatively short service at the only mill reporting its use.

Failures occurred in two instances at threads, one at bends, and in others at scattered points. Longest life comes with lowest rate of flow and temperature under 200° F. No scaling was reported.

13. *Disk Evaporator to Mixing Tank—Heavy Black Liquor.* Steel is common material, with only one mill reporting use of wrought iron. Average life is from 3 to 25 years, with failures not confined to any special location.

Longest service life may coincide with lower density and temperature, though all service conditions reported are in fairly good agreement.

14. *Recovery Furnace Spray Pump—Black Liquor and Salt Cake.* Steel is most common, with some users of wrought iron, and one reporting 18-8 stainless steel. Average life from 3 months to 25 years, with wrought iron slightly better than steel. Stainless steel installation is relatively new.

Failures occur at scattered areas. Longest life appears to come with lower densities and rates of flow, whereas shortest life may result with high sulphidity and relatively high temperature. Scaling appears to have no definite effect on service life.

15. *Weak Liquor Storage to Dissolving Tank—Weak White and Green Liquor.* Steel is usual material, with two mills reporting wrought iron and one CNI. Average life is from 6 months to 15 years, with steel better than wrought iron.

Failures occur at joints, bends, and in threads, and at any point. Shortest life coincided with scaling, high density, solids, and temperature. Low concentration liquors are not particularly corrosive.

16. *Dissolving Tank Circulating — Raw Green Liquor.* Steel is the common material reported with some mills using wrought iron, one cast iron, and one cement-lined steel. Steel has longest average life (1 to 10 years), wrought iron second best (3 months to 7 years), cement-lined steel 1 year, and cast iron six months—both last on basis of one installation case.

Failures occur at any point, and in bends, joints and threads. Cement-lined steel failed near the discharge end. Scaling and other factors appear to have no direct influence on service life, although it might be inferred that low temperature, solids, density, and rate of flow give slightly longer life.

17. *Dissolving Tank to Green Liquor Storage—Raw Green Liquor.* Steel and wrought iron are most common materials reported, with one mill reporting cast iron, and one CNi. Steel has slightly better life than wrought iron, with CNi about twice better than cast iron. Service life of steel 1 to 10 years, for wrought iron 2 to 7 years, cast iron 2 years, and CNi 4 years to date.

Few failures occur in joints and threads, but most are reported at scattered points. Scaling occurs most with wrought iron, but seems to have no direct bearing on life. Lower temperature and density favor longer life.

18. *Dregs Washer to Weak Liquor Storage—Weak Green Liquor.* Steel is most common material, with one report of wrought iron and one of CNi. Steel has life from 3 to 10 years, wrought iron 6 to 7, and CNi over 4 to date.

One failure is reported in threads. No scaling is reported. Low sulphidity seems conducive to longest life, but other factors seem to have no direct bearing.

19. *Green Liquor Storage to Clarifier—Raw Green Liquor.* Steel is usual material, with two reporting wrought iron and one CNi. Steel gives best life (from 8 months to 10 years), wrought iron from 2 to 7 years, and CNi for the one user reporting over 4 years to date.

Failures occurred in one instance in threads, once in bends, and at scattered points for others. High rate of flow, relatively high density, sulphidity, and temperature appear to have contributed to short life of steel at one mill. High sulphidity and temperature seem to have greatest bearing on reduced service life in the average installation.

20. *Dregs from Clarifier to Dregs Washer—Sludge.* Steel is usual material, with two mills reporting wrought iron. Life reported for wrought iron is better than steel at 6 to 20 years, with steel 1 to 10 years.

Two failures occurred in bends and one in threads. Low rate of flow, sulphidity, and temperature are conducive to longest life. Scaling favors wrought iron, but apparently does not reduce corrosion on steel.

21. *Dregs from Washer to Waste—Sludge.* Steel is common material with only one mill reporting wrought iron. Steel has life from 1 to 15 years, and wrought iron (one case) from 10 to 12 years.

Failures occurred in one instance in threads, and once in the valve. Low sulphidity and temperature evidently favor longer life. Other factors could not be obtained for the report, sufficiently.

22. *Green Liquor Clarifier to Causticizer—Clarified Green Liquor.* Steel is the most common material reported, with lesser use of wrought iron, and one mill reporting CNi. Average life of steel 6 months to 15 years, wrought iron 2 to 3 years, and CNi in use over one year. Failures occur in joints, ells, and at any point.

In the few instances where scaling was reported pipe life was shorter than the average. Low temperature, density, and sulphidity favor longer pipe life.

23. *Causticizer to White Liquor—Raw White Liquor.* Steel is the usual material reported for this service, with two mills reporting wrought iron, one CNi, one cast iron, one cement-lined steel, one 5% nickel steel, and one rubber. Reports were not available on average life for cement-lined steel or rubber since both are relatively new installations. Average life of steel is reported from 3 months to 10 years, for wrought iron from 6 months to 1 year, 5% nickel steel 1½ years, CNi and cast iron 2 years. This service is a relatively corrosive one.

Failures occur at joints, threads, flanges, seams, angle welds, and at scattered points. Scaling is present in a few instances and appears to shorten service life. Other factors have no definite effect.

24. *White Liquor Clarifier to White Liquor Storage—Clarified White Liquor.* Steel is the most common material in this service, though use of wrought iron, CNi, rubber, and 5% nickel steel are reported. Average life of steel is from ½ to 10 years, for wrought iron from 1 to 15 years, for CNi from 1 to over 7 years to date, for 5% nickel steel 1½ years to date, and no reported service life for the one rubber installation. Failures are reported in threads, ells, flanges, joints, and at scattered points.

Where scaling is reported for wrought iron its service life is greatest, and for one case with steel scaling was associated with longer life. Lower temperature (under 200° F.) appear to have more effect than other factors in increasing service life.

25. *White Liquor Clarifier to Thickener—Sludge.* Steel is the most commonly used material, with one mill reporting wrought iron and one 5% nickel steel. Average life reported for steel was from 1 to 10 years, for wrought iron (one case) 10 years, and for 5% nickel steel 1½ years to date. Failures occur at flanges, bends, threads, and at scattered points.

With the few instances where scaling is reported service life is slightly better than average. Low temperature favors longer life, whereas the effects of other factors are not so clearly defined.

26. *White Liquor Storage to Heater and Measuring Tank—White Liquor.* Steel is the most common material, with several reports on use of wrought iron and two on CNi. The average life of steel is from 2 to 10 years, of wrought iron 5 to 15 years, and CNi from over 4 to 7 years. Failures occur in ells, joints, and at miscellaneous points.

Scaling of wrought iron appears to favor longer life, whereas its effect with steel is not so clearly defined. Low temperature and sulphidity favor longer life. The effects of high solids and density do not appear to have important bearing on service life.

27. *Vacuum Filter Filtrate—Weak White Liquor.* Steel is usual material for this service, with some reports of wrought iron and one of CNi. The average life of steel is from 3 to 14 years, of wrought iron 12 to 20 years, and for CNi a report of 4 years to date. Failures of steel are reported at joints and ells, with the usual failures presumably by uniform corrosion.

Scaling favors longer life for wrought iron, but gives intermediate life in the one case reported for steel. Low temperatures and density favor longest life, but the effects of sulphidity could not be clearly defined.

28. *White Mud Thickener to Mud Storage—Sludge.* Steel is the most common material reported with several reports on the use of wrought iron. Average life of steel is reported as 3 to 15 years and for wrought iron 4 to 20 years. Failures occur in ells, joints and at any point.

Scaling is reported on steel in two instances, in both of which service life was less than average. Longest life of steel is reported with higher than average rate of flow, low density and higher than average temperature. Longest life for wrought iron coincides with intermediate temperature, but with other factors not fully reported.

29. *Mud Storage to Filter or Waste—Sludge.* Steel is the common material, with some use of wrought iron, and one mill reporting CNi. Average life of steel is from 1½ to 15 years, for wrought iron 2 to 20 years, and in the one instance reporting CNi the life is 4 years to date. Failures occur in ells, joints flanges, and at any point.

Scaling of steel seems to coincide with shorter life. It is not reported for wrought iron or CNi. Low density and temperature favor longest service life.

30. *Classifier to Causticizer—Milk of Lime.* Steel is the usual material for this service, with one report on the use of rubber pipe. Average life of steel is from 1 to 10 years, and for rubber (in the one case reported) 1 year. Failures occur in ells, and at scattered points, presumably from thinning by uniform corrosion.

Scaling of steel is reported in only one instance, with the installation reporting longest service life. Low sulphidity appears to favor longest life, with the effect of other factors not clearly defined.

31. *Measuring Tank to Digester—White Liquor.* Steel is the usual material reported, with some use of wrought iron in this service. Average life of steel is from 1 to 10 years, and of wrought iron from 1½ to 3 years. Failures are reported at joints in one instance, and presumably by uniform corrosion in others.

Scaling is reported in only one instance. Low temperature appears to favor longer life. Low rates of flow likewise appear to favor longer life for steel, though this factor is not fully reported for all installations. Other factors have effects less apparent from the data reported.

Utilization of Cornstalks in the Manufacture of Paper and Paperboard*

By Sidney D. Wells[1] and Roger L. Steller[2]

Abstract

Five tons of cornstalks have been shown to be capable of producing one ton of bleached fine-fibered pulp and 1.4 tons of non- and short-fibered material. Alkali and chlorine requirements are less than for poplar in the manufacture of bleached soda pulp and much less than for the manufacture of any bleached kraft pulp from any coniferous wood. All the advantages which the soda and kraft pulp mills possess in avoiding stream pollution are possessed in the pulping of cornstalks by the soda or kraft processes.

The bleached fine-fibered pulp has been shown to be highly suitable for the manufacture of a wide range of papers. In admixture with other pulps, it is obviously capable of advantageous use in the manufacture of practically every grade of paper.

The power required to treat these pulps is less than half that required for beating and refining standard sulphite, sulphate, and soda pulps made from wood. Less digester capacity is required for the production of cornstalk fine-fibered pulp than for the various wood pulps because the pretreatment with rods effectively reduces the bulk of the fibrous material.

The non- and short-fibered fraction removed by gyratory screens after pretreatment with rods and washing is capable of imparting bursting strength and stiffness to old paper stocks or virgin kraft pulp without the use of beating, so that high crush strength corrugated papers can be made superior to those commonly available at the present time. Ply adhesion in multicylinder boards is greatly enhanced.

Sufficient cornstalks are available and easily collectible in the central states north of the Ohio River, south of the Great Lakes, and east of central Kansas and Nebraska to produce over 10 million tons of bleached fine-fibered pulp per year and contribute an equal amount (or more) of non- and short-fibered material to the manufacture of 20 million tons of corrugating paper and paperboard per year.

The use of the dried and ground non- and short-fibered material as a molding powder for plastics would also contribute to the desirable and economical utilization of this vast agricultural waste.

In the manufacture of the wide variety of papers required to satisfy the cultural, business, and technical needs of our civilization, the characteristics required are varied and numerous. The variety of pulps available, however, must of necessity be limited. For this reason, there is no satisfactory pulp available for the manufacture of light-weight papers which is capable of use without very drastic mechanical treatment to reduce the dimensions and characteristics of the fibers so that they will make a sheet that is not so porous as to be worthless for many purposes. The volume of paper in this field is considerable, and its use is important. In heavier papers the surface is of paramount importance and must permit high-grade printing and satisfactory writing. Considerable mechanical action is required to adapt the available pulps to these purposes and, at best, much remains to be desired on the part of the user under the pressure of modern demands.

Although the conditions mentioned describe the present situation, there fortunately exists an untapped reservoir of fine fiber less than one quarter of the diameter of spruce sulphite fiber and only about two thirds of the diameter of poplar soda pulp fibers. This reservoir is enormous in extent and occurs in the finest paper and board market in the world—namely, the area served by the city of Chicago.

This source of fiber is the very large quantity of cornstalks destroyed each year in the region extending north from the Ohio River and including the state of Ohio and intermediate states to eastern Kansas and Nebraska, and north to Minnesota and the Great Lakes. In this area, over half of the paper and paperboard made in the United States is printed, converted, and otherwise used in conjunction with food processing and packaging, mail-order merchandising, automotive and rubber manufacture, publication of periodicals, and other industries for which this area is pre-eminent. The weight of cornstalks (free from leaves, corn, and husks) which is available and not otherwise utilized in this area in a normal year amounts to over 45 million tons of dry material.

Earlier work *(1)* has indicated that four tons of bagasse are capable of producing one ton of bleached fine-fibered paper pulp and one ton of nonfibrous and short-fibered material capable of admixture with an equal quantity of waste paper stock for the production of high-test corrugating paper. With selected kraft waste substituted for some of the miscellaneous mixed paper, manufacture of high-test multicylinder paperboard was shown to be possible. The structural similarity between sugar cane and cornstalks led to the investigation of the latter, with the object of demonstrating a latent source of excellent papermaking fiber and material which would amount annually to over 10 million tons of bleached fine-fibered paper pulp and 14 million tons of cellular and short-fibered unbleached material capable of enhancing the crushing and bursting strength of corrugating paper in which it is used and also the bonding strength of paperboard.

Historical

In 1903 the National Fiber and Cellulose Company used the Sherwood process *(2)* to produce paper from the fibrous fractions of cornstalks after the pith material had been mechanically removed for use in

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the packing between the hulls and the armor plate of battleships to close up automatically holes made by projectiles by the swelling of the pith on contact with water. The use of pith in naval design, however, did not continue and the papermaking project was soon abandoned.

About the same time Viggo Drewsen, Technical and Research Director of the West Virginia Pulp and Paper Company for many years, carried on a large amount of work on the cooking of cornstalks by the soda process, combined with removal of the well-cooked pith cells by drum washers and their recovery by settling save-alls. Although very satisfactory book paper was made on a small fourdrinier machine in a New England book paper mill, the success of the project depended upon location in a portion of the country where corn was more plentiful and this requirement was never fulfilled.

In 1927 the Cornstalks Products Company *(3)* of Danville, Illinois, carried on the most nearly successful operation in this country for the production of cornstalk pulp. They operated with the Dorner process *(4)* which, according to Sweeney and Arnold *(2)*, was used at Danville as a modified soda process. This plant produced about 50 tons of pulp per day, but in 1930 it went into the hands of a receiver.

The only successful commercial use of cornstalks has been in the production of insulation board by the Maizewood Insulation Company, Dubuque, Iowa. This plant produces insulation board, roof insulation, asphalt-coated sheathing, lath tile, and plank at a rate of 110,000 square feet per day, and the operation since its establishment in 1929 has demonstrated the economic soundness of such a development.

A large amount of work has been done on the conversion of the entire cornstalk into pulp but, since the beginning of the present century, there has been a tendency to develop methods for the separation of the pith from the fibrous portions of cornstalks and to pulp the resulting fibrous portion. The separated pith has been recommended for use as fodder or for other agricultural purposes.

Two general methods have been suggested for the separation of the pith from the fiber: dry separation and wet separation. An example of the dry methods was the mechanical separation patented by Sherwood *(5)* in 1898. A great amount of work on the wet separation of fibers from cornstalks has been done by Drewsen *(6)*, whose latest patent (1917) proposed the use of fibers in newsprint. One of the most recent methods for the wet separation of pith is that of Wells *(7)*, and it is this method, using the rod mill for the preliminary digestion, which has been used in this investigation.

The difference between the pith and the fiber of cornstalks has been found to be to a large extent physical, because pulp analyses show very little variation between pith and fibers as seen in Table I.

The physical difference was found by many investigators to be one of apparent density as pointed out by Sweeney and Arnold *(8)*, because the pith cells are small thin-walled cells filled with air and the fibers compare well with those found in pulpwoods.

TABLE I.—ANALYSES OF CORNSTALKS

	Leaves, Stalks, and Husks*(8)*	Stalks Minus Leaves and Husks*(9)*			
	Total Cornstalk	Outer Shell	Vascular Bundles	Pith	Total Stalk
Pentosans	27.95	25.9	26.7	27.7	27.6
72% sulphuric acid lignin	34.3	33.5	35.2	32.0	34.3
Cross and Bevan cellulose	45.03	...	...	...	45.5
Alpha-cellulose	53.34	55.9	50.2	50.1	52.6

The mechanical separation of the pith in the dry condition has been found to be impractical *(12)*. The subjection of the pith to drastic action before separation from the fiber was very extravagant in chemical consumption and the yield of product from the nonfibrous and short-fibered elements of the stalk was so low as to contribute little of value to help carry the cost of producing the fibrous pulp which was the principal product desired.

In the Wells process, the non- and short-fibered constituents are separated from the constituents capable of yielding the fine-fibered pulp after a very mild softening action in which only 30-35% of the vegetable material has gone into solution. A much higher yield of this material is thus obtained, and none of its bonding and stiffening characteristics are lost. The fibrous constituents are completely freed of dirt and foreign matter, and the cooking treatment may be designed to yield the exact characteristics desired.

Experimental Procedure

The procedure involved in this investigation was to treat stripped cornstalks in a hot rod mill with weak alkali and to screen the resulting semipulp on a gyratory screen using a 40-mesh wire; the pith fraction was thus separated from the fibrous portion. The semipulp was cooked in a rotary digester with an excess of alkali for a comparatively short time for a soda cook, and the resulting black liquor was used for subsequent pretreatment of more cornstalks in the rod-mill operation. This pulp was bleached and beater evaluations were run on the bleached pulp. The pith material was mixed with unbleached kraft pulp in percentages varying from 0 to 100% pith, and nine-point board handsheets were made from these mixtures. The procedure thus far followed very closely that developed by Wells and Atchison *(1)*. The ply-adhesion value of the pith material was studied by testing the tear-split force between the plies in duplex sheets of varying mixtures of pith and unbleached kraft, using the method developed by Brown *(10)* with the attachment for the Elmendorf tear tester designed by Clark *(11)*. The possible use of the pith material in plastics was investigated very superficially.

Raw Material

The cornstalks were obtained from the Maizewood Insulation Company, Dubuque, Iowa. These stalks were collected and baled in the fall of 1940 and stored at Dubuque for one year. Because it is known that pulp from the stripped stalk produces the strongest pulp, two bales of cornstalks were stripped of husks and leaves which have a greater value as fodder or for other farm uses than for paper and paperboard. This stripping could be worked into the harvesting operation when gathering cornstalks for the paper and board industry, so that the cost would be more than offset by the value of the husks and leaves for fodder or fertilizer. The yield of the two fractions is shown in Table II.

TABLE II.—CORNSTALK PREPARATION

	Weight, lb.	%
Stalk fraction	77	47.8
Dirt, leaves, and husks	72	44.7
Loss during separation	12	7.5

An ordinary farm shredder was used to break the stalks into pieces about two inches long. This

shredded raw material had a moisture content of 7.1%.

Rod-Mill Treatment

An experimental Marcy rod mill, which could handle conveniently 500 grams of moisture-free material per charge, was used. The inside dimensions of this rod mill were 12 inches in diameter by 24 inches in length. The rods and inside lining of the mill were of manganese bronze. The total weight of the rods was 220 pounds, and the rods varied in size from ¾ to1.5 inches in diameter. The rod mill was rotated at a speed of 42 r.p.m.

Before the rod mill was charged, the rods and the drum were heated to above 90° C. by the direct introduction of steam. The condensate was drained from the drum, and raw cornstalks were distributed among the rods. The rod mill was then closed, and hot caustic solution and hot water were added through the feed end of the drum in amounts sufficient to give the desired concentration and consistency for the run. The drum was rotated with continuous addition of steam for 10 minutes. The semipulp thus obtained was pressed in a wine press to about 20% consistency and the black liquor collected. In all cases a representative sample of this black liquor was saved for analysis for active and total alkali. The semipulp was freed of alkali by thorough washing and pressing.

Pith Separation by Use of a Gyratory Screen

A small motor-driven gyratory screen, of the type used in foundries, coating mills, etc., was used for the separation of the pith from the fiber. This screen was equipped with a 40-mesh screen. For each batch, about 300 grams of semipulp (dry basis) were placed on the screen, which was covered with a special top through which a stream of hot water was introduced. The screen was operated for about seven minutes for each batch of semipulp.

The screen and motor assembly were suspended over a wooden tank, and the pith and short fibers passing through the screen with the water (which was introduced above the screen) were collected in the tank. The pith and short fibers were recovered from the suspension in the tank by draining through cloth-covered draining boxes.

Cooking of Fibrous Portion

An experimental rotary digester of the horizontal type with a stainless-steel shell was used for cooking the fibrous portion. This digester was about 10 inches in diameter by 26 inches in length and was heated by means of gas burners.

The fibrous portion of the semipulp, cooking liquor, and water were added to the digester in quantities which would give a consistency of about 10.8% and an active alkali concentration (as sodium oxide) of about 20%. The digester was rotated at 1.3 r.p.m. and the temperature was raised gradually to 100° C. over a period of 50 minutes; the digester was then relieved of the false pressure present by gassing down to zero pressure. The cook was continued by raising the temperature to 165° C. in 65 minutes, after which the digester was gassed down to zero pressure. The digester charge was removed and pressed to recover the strong black liquor for subsequent rod-mill operation. The pulp was washed free of caustic and screened on a small diaphragm screen to separate acceptable pulp, fines, and screenings.

Bleaching

Based on the permanganate number of the unbleached pulp, the percentage available chlorine used in the first-stage bleach was determined; one quarter of the permanganate number was taken as the percentage of available chlorine to be used.

First-stage Bleaching. The fully cooked pulp was given a two-stage bleach, consisting of a treatment with chlorine water, followed by a water wash, 1% alkaline extraction, water wash, and a final hypochlorite bleach.

Unbleached pulp (equivalent to 500 grams on the moisture-free weight) was mixed with chlorine water and water so as to give the desired available chlorine percentage and a consistency of 3.5%. This pulp mixture was maintained at 25° C. in a constant temperature bath until the chlorine was exhausted, as determined by starch-iodide paper. The chlorinated pulp was washed first with cold water and then with hot water and pressed in a wine press.

In the case of pulp from Cook 4, the pulp was slushed to 2.4% consistency in an Atlas chlorinator and 1.95% of chlorine was added from a cylinder through a calibrated orifice. The treatment following was that given above.

Alkaline Extraction of Chlorinated Pulp. The pulp was dispersed in sufficient water and alkali to give 10% consistency and 1% alkali (as sodium oxide) based on the dry weight of the fiber. This suspension was maintained at 40° C. for one hour in a constant temperature bath, washed, and pressed.

Second-stage Hypochlorite Bleach. The alkaline-extracted semibleached pulp was diluted to 5% consistency with water, and sufficient bleaching solution was added to give the percentage of chlorine required as found by the bleach requirement. This suspension was maintained between 35 and 38° C. until the bleach was exhausted, as shown by starch-iodide paper. The bleached pulp was washed with water at about 30° C. and samples removed for brightness handsheets, which were made and tested according to TAPPI Standard T 217 m-42.

Beater Evaluation of Pulp

Beater runs were made using a 1.5-pound beater of the Niagara type, with 4500 grams on the bedplate. Handsheets were made on the British sheet mold. All freeness values for the beater intervals were obtained on the Schopper apparatus.

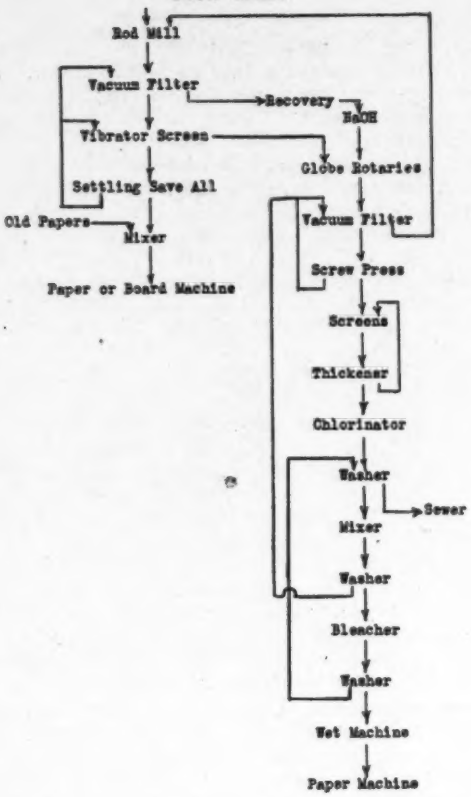
All handsheets were seasoned in the humidity room for at least six hours before testing at 65% relative humidity. The handsheets were tested for the following characteristics, using five sheets in each beater interval: Basis weight, caliper, bursting strength, tearing strength, and opacity.

Analysis of Soda Black Liquors (Conductometric Titration)

The apparatus used consisted of two ½-inch bright platinum electrodes mounted about ½ inch apart in a vertical direction, a 110 to 118-volt doorbell transformer, a 500-ohm potentiometer with a 50-ohm resistance slide in series for adjusting constant voltage, a 25-milliampere a.c. ammeter, and a device for measuring the potential between the electrodes, consisting of a rectifier and a 1-milliampere d.c. ammeter. A switch was used to close the circuit for readings. The titration vessel used was a 250-cc. beaker.

The procedure for the conductometric titrations was to place about 150 ml. of (carbon dioxide-free)

FLOW SHEET



distilled water in the titration beaker (enough to cover the electrodes) and add 4 ml. of black liquor from the rod mill or 1 ml. of black liquor from a cook. After the stirrer was started, the a.c. ammeter was set between 15 and 20 amperes by resistance adjustment and the initial reading recorded. The reading of the d.c. ammeter was maintained constant during each titration. Small increments of 0.1 *N* hydrochloric acid were added to the titration beaker, and the a.c. ammeter readings at constant voltage were taken. Graphs were made by plotting milliamperes of conductivity against milliliters of acid added. Successive points on different portions of the curves formed straight lines. The intersections defined the titration volumes corresponding to successive neutralization of hydroxide, carbonate, and sodium organic compounds.

Thus, active alkali or sodium hydroxide of the black liquors was defined by the first straight line, and this gave the volume of standard acid equivalent to the active alkali present.

After neutralization of the black liquor was complete, a final steep line was obtained on the graphs which was the conductance line for the acid itself. The intersection at the beginning of this line represents the volume of standard acid required to neutralize all the alkali present in the black liquor. Thus, the total alkali was obtained.

This conductometric titration was used rather than a volumetric analysis because with cornstalk black liquor too much coloring material remained after the precipitation with barium chloride to permit colorimetric analysis.

MIXTURES OF CORNSTALK PITH AND UNBLEACHED KRAFT IN BOARD

Two 360-gram (on the moisture-free basis) portions of unbleached southern kraft were beaten in a 1.5-pound beater to a Schopper freeness of 550 cc. and 730 cc., respectively.

The portion of kraft pulp of a freeness of 550 was mixed with unbeaten pith stock in percentages ranging from 100% pith to 100% kraft through six variations. The stocks were thoroughly mixed by high-speed agitation, and a volume of stock was removed for each handsheet which was equivalent to 4.7 grams (moisture-free weight) for a sheet size 8 by 8 inches. These sheets were formed on the Noble-Wood sheet mold and pressed on the Noble-Wood press. The caliper of this series of sheets was about 0.008 inch.

The portion of kraft pulp of a freeness of 730 was treated in exactly the same way, except that six grams (moisture-free weight) of fiber were made into 8 by 8-inch sheets which calipered about 0.009 inch.

These sheets were dried on a steam drier and then conditioned in the humidity room at 65% R.H. before testing for basis weight, caliper, bursting strength, tearing strength, and Riehle stiffness by the standard procedures.

Five sheets in each of these series were made for each variation of kraft and pith for the above strength tests. In addition to these strength sheets, five duplex sheets were made of each variation, which contained the same amount of stock as the strength sheets; one-half the stock was present in each ply.

A piece of glassine paper was placed between the plies at the edge of the duplex sheet when it was being formed, so that a uniform edge could be obtained at which the splitting of the plies would begin. Uniform areas (40-sq. cm. rectangles with V-shaped lower edges) were cut from each of these duplex sheets by following the same pattern, and the free tabs on this V-shaped lower edge of samples were clamped in the Elmendorf tear tester by a special clamp designed by Clark *(11)* so that, when the pendulum was released, a value of the ply adhesion between the two plies was obtained on the scale of the tear tester.

Presentation of Data

PREPARATION OF MATERIAL

Because the nature of cornstalks and bagasse is very similar, it was decided to start with the conditions used in Wells and Atchison's work on bagasse *(1)* for trial runs in the rod-mill treatment of cornstalks. These included the operation of the rod mill with 500-gram charges of cornstalks at 15% consistency and 9% active alkali, with a rotation time of 20 minutes. Run 1 was started with the above values for active alkali and consistency but, after the reaction had proceeded for about 10 minutes, the sound of the rods seemed to indicate that the stalks were very well broken down. Therefore, this run was stopped at the end of 13 minutes.

ROD-MILL TREATMENT AND GYRATORY FRACTIONATION

For Run 2, the conditions were changed so that the operation was carried out at 7.5% alkali concentration and 15% consistency for 10 minutes. The results of these two runs are shown in Table III.

The yield data shown for Runs 1 and 2 in Table III were not accurate, because of the difficulty of

recovering pith from the screening operation and of measuring the consistency of the screened fibrous portion as a result of its heterogeneous nature. Nevertheless, the active alkali and the yield of pith in Run 2 indicated that a good separation of pith and fibers could be obtained at 15% consistency and 7.5% caustic for 10 minutes in the rod mill. To check the gyratory screening efficiency, a qualitative microscopic examination was made of the fibrous and pith fractions. The results showed the fibrous portion to be made up almost entirely of fiber bundles with a few pith cells and the pith fraction to be made up of approximately 80% pith cells and 20% short fibers.

TABLE III.—PRELIMINARY ROD-MILL RUNS

Run	Consistency %	NaOH %	Duration Min.	Yield		
				Pith %	Fiber %	Total %
1	15	9	13	23	35	58
2	15	7.5	10	20	32	52
3-10	15	7.5	10	17	41	58
11-17	15	7.5	10	26	37	63
18-24	15	7.5	10	21	40	61
25-31	15	7.5	10	23	41	64

The results obtained with rod-mill Runs 3-10, made under the conditions of Run 2, are shown in Table III. The fibrous portion from these runs was cooked by the soda process in the rotary digester, the resultant pulps bleached, and a beater evaluation made on the product. This bleached pulp had strength values which were very encouraging but, because the data concerning the conditions of the cook were not complete on account of an accident, the resultant pulp strengths are not included in this report.

The result obtained with rod-mill Runs 11-17 and the resultant gyratory screening operation showed about the optimum separation of pith and fibers.

The residual active alkali remaining in the liquors pressed from the pulps after the rod-mill treatment varied from 1.1 grams in Runs 1-10 to 0.9 gram per liter active Na_2O in Runs 11-19. With the exception of Run 1, the active alkali at the start in each run was 13.2 grams per liter or a utilization of 92% in the case of the higher amount and 93% in the case of the lower.

In Runs 18-31, the residual active alkali was 1.2 grams per liter of free Na_2O, indicating less action and probably more loss of heat from radiation during the rod-mill treatment. The utilization of soda, however, amounts to 91% or relatively very little less. On a mill scale with continuous operation, radiation would be less than 0.3% as great per unit output, so that maintenance of temperature would be a much simpler problem.

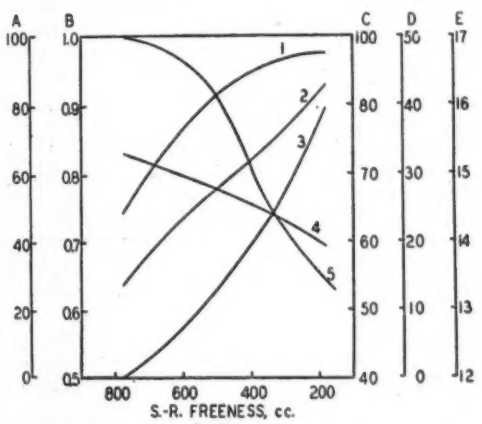


FIG. 1

Beater Evaluation of Bleached Soda Pulp. 1. Burst (A, lb./100 lb. basis wt.); 2. Apparent Density (E, lb. basis wt./0.001 in. caliper); 3. Time of Beating (D, min.); 4. Opacity (C, Contrast Ratio × 100); 5. Tearing Strength (B, g./lb. basis wt.).

FINAL ALKALINE DIGESTION

The coarse fibrous fractions were cooked under conditions shown in Table IV. Rotary autoclaves were necessary to insure positive distribution of the cooking liquor through the charge. The cooking charges were 1200 grams (moisture-free basis) of fibrous material. Cook 4 was made using a typical kraft cooking liquor having a ratio of 1 part sodium sulphide to 2.2 parts sodium hydroxide, both expressed as sodium oxide.

Permanganate numbers were obtained on the fine-fibered pulps as shown in Table IV for Cooks 2, 3, and 4. In addition, the following permanganate numbers were obtained:

Coarse fibrous fraction—Runs 11-17	21.6
Non- and fine-fibered fraction	23.7
Fines from Cook 2	7.1

CHLORINATION AND BLEACHING

The accepted pulps from the final alkaline digestion were chlorinated and bleached according to the standard procedure, basing the amounts of reagents required upon the permanganate numbers before chlorination and the bleachability after the alkaline extraction that followed chlorination. A standard brightness of 72 on the General Electric brightness tester was set as the standard to be attained. The purification and bleaching data are given in Table V.

TABLE V.—BLEACHING CONDITIONS

Cook	Chlorination Percentage Cl	Extraction Percentage NaOH	Bleach Percentage of Average Cl	Yield of Bleached Pulp, %
2	1.6	1.0	1.4	94.6
3	1.7	1.0	2.0	94.3
4	2.0	1.0	2.0	92.5

BEATER EVALUATION OF BLEACHED PULPS

The beater evaluation of the bleached pulps is presented in Table VI.

The curves in Fig. 1 show the physical tests obtained on the pulp from a typical cook plotted against the Schopper-Riegler freeness. They clearly indicate the possibility of using cornstalk pulp either alone or with other pulps in a very wide range of papers; the only marked difference in procedure would be to reduce materially the amount of treatment in the beater or jordan with the saving of from 30 to 60% of the power usually required for these steps in the preparation of furnishes from standard wood pulps.

For comparative purposes, some tests of commercial pattern tissue paper and bond paper are given

TABLE IV.—COOKING CONDITIONS

Cook	Source of Fiber Run	Active Alkali (Percentage Na_2O on Weight of Fiber Charged)	Water Ratio	Caustic Consumed (Percentage Na_2O on Weight of Fiber Charged)	Time to Reach		0 lb. Pressure Min.	Yields Accounted for		Screenings and Fines on Cooked Pulp %	Permanganate Number
					100° C. Min.	165° C. Min.		On Original Stalks %	On Fiber Charged %		
2	11-17	20	1:9	6.9	53	72	15	23.6	63.1	6.4	6.5
3	18-24	20	1:9	7.0	50	75	15	23.4	58.6	8.0	6.6
4	25-31	20	1:10	..	50	65	8	27.7	67.1	7.3	7.5

in Table VII, together with tests on comparable grades made from the bleached fine-fibered pulp from cornstalks. In the case of the commercial pattern tissues, 15 and 25% of jute were included in the furnish with bleached kraft and sulphite pulps to give the required tests.

TABLE VII.—COMPARISON OF VARIOUS PAPERS

	Ream Weight	Tear Factor	Burst, %	Folds
Commercial	11	0.58	51	....
Pattern tissue	10	0.56	57	....
Cornstalk	12	0.60	58	....
Bond, commercial	61	1.12	68	125
Bond, cornstalk (*13*)	61	1.10	80	1400

It is evident from the evaluation of the bleached, fine-fibered cornstalk pulp that a wide range of papers meeting commercial standards can be made from such pulp. Most of these papers can be manufactured with a saving of 50% or more of the power now used in beating and refining the wood pulps now available. The range of grades of papers that can be made readily may be vastly extended by adding small amounts of bleached kraft pulps bleached and unbleached sulphite, and bleached soda pulps in the furnish. The cornstalk fiber can be used with groundwood pulps in the manufacture of superior light-weight catalog and rotogravure papers. Such use usually results in better paper than when the cornstalk pulp is replaced by sulphite pulp.

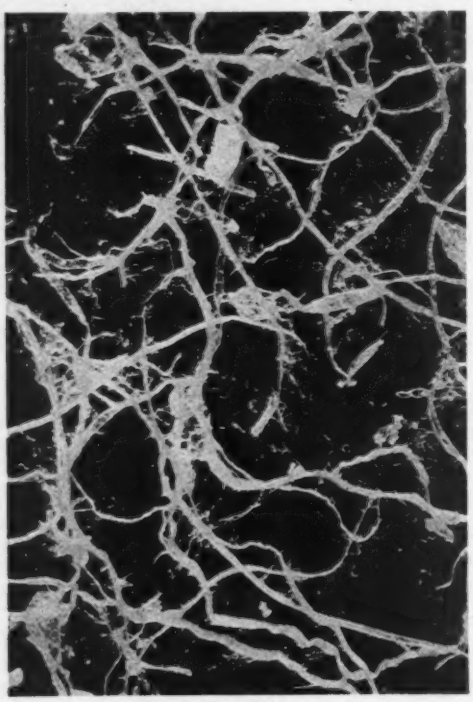


FIG. 2
Photomicrograph of Bleached Cornstalk Fibers Beaten for Manufacture of Bond Paper (× 100)

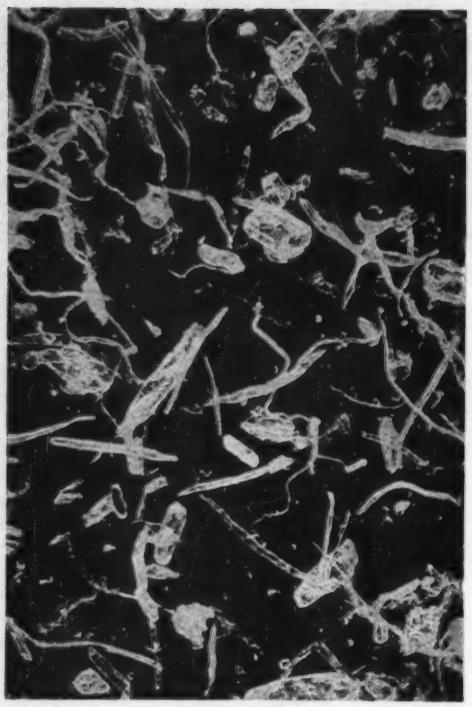


FIG. 3
Photomicrograph of Non- and Short-Fibered Fractions of Cornstalks (× 100)

A photomicrograph of the bleached fibers, beaten for the production of bond paper, is shown in Fig. 2; the non- and short-fibered fractions (discussed in the following paragraph) are shown in Fig. 3.

EVALUATION OF NON- AND SHORT-FIBERED FRACTIONS

The non- and short-fibered fraction, obtained by passing the product resulting from the treatment of the cornstalks with rods in the presence of hot black liquor over 40-mesh gyratory screens, was too slow to use alone in the manufacture of any standard paper. It also dries irreversibly into a hard horny mass which cannot be repulped in the ordinary equipment used to convert dried pulp to slush stock. It possessed to a remarkable degree, however, the power to give bonding and bursting strength and stiffness to unbeaten pulp and old paper mixtures, from which finished corrugating paper and board can be made with very substantial savings in power; it also makes possible the use of waste paper in grades in which it is otherwise incapable of satisfactory use, either for technical or economic reasons.

For the purpose of evaluating the pith, one lot of unbleached southern kraft pulp was beaten to a freeness of 550 cc. S.-R. (Series I) and mixed with the

TABLE VI.—BEATER EVALUATION

Time in Beater Min.	S.-R. Freeness, cc.			Tear, %			Burst, %			Apparent Density			Opacity, %		
	Cook 2	Cook 3	Cook 4	Cook 2	Cook 3	Cook 4	Cook 2	Cook 3	Cook 4	Cook 2	Cook 3	Cook 4	Cook 2	Cook 3	Cook 4
0	780	700	710	1.0	0.7	0.8	48	56	63	13	16	15	73	69	66
20	380	620	620	0.8	0.7	0.7	90	69	71	15	16	16	65	68	64
40	175	500	560	0.6	0.6	0.7	96	77	73	16	17	16	59	64	63
60	...	210	525	..	0.5	0.7	..	85	77	..	18	16	..	58	62
100	...	...	350	..	..	0.6	..	..	89	..	..	17	..	..	62

The ream of 25 x 40—500 was used, and the test sheets averaged 47 pounds with a maximum deviation of +1.3 and —0.7.
The tear given is the quotient from dividing the tearing force in grams by the ream weight in pounds.
The burst given is the quotient from dividing the burst test by the ream weight and multiplying by 100.
The opacity was obtained on the Bausch & Lomb opacimeter and is contrast ratio.
The apparent density is the quotient from dividing the ream weight by the thickness and multiplying by 1000.

non- and short-fibered fraction in the ratios indicated in Table VIII. In Series II, the kraft was unbeaten and had a freeness of 730 cc. S.-R. The test sheets weighed 78 pounds (25 x 40—500) in the case of Series I, and 102 pounds in the case of Series II. All were conditioned to 65% R. H. before testing.

It is very apparent that, for purposes of making corrugating paper, mixtures of from 40 to 60% of non- and short-fibered fraction give optimum strength values of interest to box manufacturers and shippers; it does not make much difference whether the kraft is unbeaten or beaten to a freeness of 550 cc. S.-R. Values more than double the commercial standards are obtained, indicating a very satisfactory margin within which to operate.

To promote adhesion in the manufacture of multicylinder board, the non- and short-fibered fraction increased the bond of the resultant boards by over 100% when 60% was used in the furnish. In the case of unbeaten pulp, the increase was very great at first and proportionally less as the amounts increased. With beaten pulp, the increase was proportionally less at first and greater as the amounts increased. With the use of 40%, equal bond was manifested by beaten and unbeaten kraft.

Plastic Material

A few molding trials were made on the non- and short-fibered fraction, thoroughly dried and reduced to powder, with very encouraging results under conditions closely comparable to those used with molding powders now in substantial commercial production.

Cost Estimate

Five tons of dried cornstalks are required to produce 1 ton of bleached fine-fibered pulp and 1.4 tons of non- and short-fibered pulp. During the past ten years, baled cornstalks, delivered to central points in areas within a 20-mile radius, have been available for not over $7.50 per ton of dry weight. Numerous regions in the central states have more than 40% of the land area planted to corn for a cash crop every year, with no use whatever made of the stalks. Such an area, with a radius of 20 miles and provided with the good roads recently built in the corn country, is capable of supplying over 1000 tons of dry stalks per day, sufficient for a mill producing 200 tons of bleached fine-fibered pulp and 280 tons of non- and short-fibered material; the latter may be used with an equal quantity of waste papers in the manufacture of 560 tons of corrugating paper per day. It is obvious that units large enough to enjoy efficient and low cost operation are possible. The cost of production would sum up as follows:

5 tons of cornstalks delivered	$37.50
Conversion cost	23.00
	$60.50
Minimum value of 1.4 tons of non- and short-fibered fraction in the manufacture of corrugating paper	21.00
Net cost of 1 ton of bleached fine-fibered pulp	$39.50

At the present time manufacturers of straw corrugating paper are finding great difficulty in securing sufficient straw on account of the increasing use of small combines which have lately been made available to the farmers. These machines harvest and separate wheat, oats, and rye grain and leave the straw short and scattered over the fields. Around most of these mills, however, a larger tonnage of cornstalks is usually grown than of cereal straw, and this waste would be a more dependable source of raw material.

There are also many restrictions to the manufacture of strawboard on account of the silica contained therein, which seriously reduces the efficiency of the recovery operation. Furthermore, the amount of soda necessary for the pulping of straw for use in the manufacture of corrugating paper is so small that recovery is impractical. Cornstalks, however, lend themselves very easily to the soda process, and the recovery of the alkali is not complicated by the presence of abnormal amounts of silica or for any other reason. Commercial operation at Danville, Illinois, for months at a time clearly demonstrated this point. The carbon from the black ash was also shown to be valuable for carbon black, absorbent carbon, and other uses.

Thirty years ago *(14)* the senior writer pointed out the possibility of making kraft paper from southern pine equal in quality to commercial papers then on the market. At that time, the established kraft manufacturers refused to adapt themselves to the technically obvious facts, and continued to expand in regions not economically suitable for competitive survival. It would seem advisable to demonstrate on a commercial scale, with the least possible delay, whether the results of the present technical investigations will not be borne out in commercial operation in much the same manner that southern pine has been developed and now furnishes the raw material for over half of the wood pulp being manufactured in the United States. Expansion of the industry without due attention to such a vast source of paper- and board-making raw material located within the area comprising the finest paper and paperboard market in the world may prove as disastrous as the failure to heed the indications of technical investigation thirty years ago.

Literature Cited

1. Wells, Sidney D., and Atchison, Joseph E., *Paper Trade J.* 112, No. 13: 34-38 (March 27, 1941); *Tech. Assoc. Papers* 24: 114-118 (1941).
2. Sweeney, O. R., and Arnold, L. K. The production of paper from cornstalks. Iowa State College, Eng. Expt. Sta., Bull. 100. 1930. 78 p.
3. Hulbert, E. F., *Paper Trade J.* 87, No. 13: 51-54 (Sept. 27, 1928); *Tech. Assoc. Papers* 12: 92-95 (1929).
4. Dorner, Bela, U. S. Patent 1,038,730 (Sept. 17, 1912).
5. Sherwood, George R., U. S. Patent 627,882 (June 27, 1899).
6. Drewsen, Viggo, U. S. Patent 1,229,422 (June 12, 1917).
7. Wells, Sidney D., U. S. Patent 2,029,973 (Feb. 4, 1936).
8. Sweeney, O. R., and Arnold, L. K. Cornstalks as an industrial raw material. Iowa State College, Eng. Expt. Sta., Bull. 98. 1930. 48 p.
9. Peterson, C. J., and Hixon, R. M., *Ind. Eng. Chem., Anal. Ed.* 1: 65-67 (1929).
10. Brown, Duncan S., *Paper Trade J.* 112, No. 3: 33-44 (Jan. 16, 1941); *Tech. Assoc. Papers* 23: 143-154 (1940).
11. Clark, James d'A., Unpublished work, The Institute of Paper Chemistry.
12. Weber, C. G., Shaw, M. B., and O'Leary, M. J. Natl. Bur. Standards, *Misc. Publ.* M147. 1935. 9 p.
13. Natl. Bureau of Standards, *Paper Trade J.* 88, No. 10: 49 (March 7, 1929).
14. Wells, Sidney D., *J. Ind. Eng. Chem.* 5: 11 (1913).

TABLE VIII.—BOARD EVALUATION

Kraft, %	Pith, %	Schopper-Riegler Freeness, cc. I	Schopper-Riegler Freeness, cc. II	Riehle Stiffness I	Riehle Stiffness II	Mullen Burst I	Mullen Burst II	Elmendorf Tear I	Elmendorf Tear II	Tear-Split I	Tear-Split II
100	0	550	730	19	15	107	92	2.5	3.1	31	27
80	20	330	545	22	19	100	100	2.0	2.2	38	41
60	40	250	330	24	21	88	90	1.5	1.7	48	49
40	60	250	300	23	22	73	78	1.2	1.3	67	59
20	80	260	290	22	22	53	66	0.9	0.9	..	..
0	100	270	250	19	20	31	46	0.5	0.4	..	..

Swelling-Staining Reagent for Studying Fiber Structure

By Wm. M. Harlow[1]

The effect of certain quaternary ammonium hydroxides on cellulose has been reported by Sisson and Saner[2]. The fibers increased in diameter and gave X-ray patterns which differed from those of untreated material.

A study of the effect of trimethylbenzylammonium hydroxide on pulps of varying lignin content will be reported subsequently. Meanwhile, the possibilities of a new swelling-staining combination are presented.

One difficulty in observing, and particularly photographing swollen fibers, is that they tend to merge with the background and register poor contrast. The organic base itself (50% aqueous solution) as a swelling reagent was found to be better for showing minute details of the swollen fibers than any other liquid ever tried, but the contrast with the background was still poor. It was thought that perhaps some stain might be found which dissolved in the base would have an affinity for the fibers. Several stains were tried. Gentian violet, anilin blue, and nigrosin dissolved little if any; safranin, light green, Congo red, Bismarck brown, and erythrosin dissolved but did not become affixed to the fibers.

Ruthenium red, the classical "pectin" stain of some botanists is an inorganic substance. Although very expensive, it is a powerful stain and is commonly used in aqueous solutions of 1:5000 or even less. Fifty milligrams of Ruthenium red were dissolved in 20 ml. of the base and filtered through glass wool (somewhat wasteful, and of doubtful necessity since the stain is quite soluble at this concentration). The effect of a drop of this swelling-staining reagent on delignified fibers of shortleaf pine is shown in the accompanying figure. Many but not all of the fibers are almost immediately brilliantly stained, especially the unballooned portions. By using a green filter, considerable contrast may be secured. Only small quantities of the staining solution should be made up as needed because it tends to be unstable after standing a few hours (color fades). Twenty milligrams of dry stain in 20 ml. of the base was found subsequently to produce nearly as good results as the higher concentration.

[1] Dept. of Wood Technology, N. Y. State College of Forestry, Syracuse, N. Y.
[2] *J. Phy. Chem.* 43:687-99 (1939).

Delignified Fibers of Shortleaf Pine, X-160 Stained with Ruthenium Red Dissolved in Trimethylbenzylammonium Hydroxide

Revolutionary New Container

A revolutionary new container estimated to save tens of millions of pounds of essential metals annually, which may prove to be the best answer to the can shortage yet found, as well as the discovery of a new type package material for the future, is being announced jointly today by Shell Oil Company, Inc., and the Canister Company of Phillipsburg, N. J. The oil company has already introduced the new material in initial quantities to the public as a motor oil package.

The new container is made up entirely of non-critical materials, including fiber, parchment paper, adhesives, etc. As an example of the many substitutions made necessary by the war which may prove even better than original materials, prospects for widespread use of the new type container are enormous.

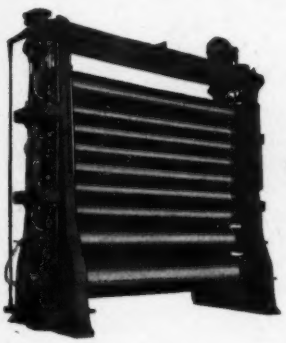
The manufacturers of the new fiber container also point out that, although various canners have experimented with different kinds of paper containers for oil products since the tin shortage was first felt, so far as is now known, none of them have proved entirely successful. The biggest difficulty, has been the inability to adapt present can-filling equipment to non-metal containers. Other types of paper containers have also been found very suspectible to leakage and have been unable to stand up in shipping. Both of these problems have been solved, the manufacturers say.

The Shell Oil Company, which cooperated with the Canister Company in most of the research and experimentation that led to the development of the new package, has completed a series of tests to determine how the container would stand up under the rough handling to which motor oil cans are usually subjected. The new cans, having successfully passed these tests, are now being introduced on a small scale in eleven markets, including Boston, Baltimore, Albany, New York City, Chicago, Cleveland, Detroit, Minneapolis, St. Louis, Indianapolis and New Orleans.

It is announced that the new motor oil container will be in general use everywhere in the United States by the early part of the summer.

WPB Forms Advisory Committee

Washington, D. C., April 7, 1943—The WPB has announced a new Paperboard Container Allocation Industry Advisory Committee with Thomas E. Morriss as Government Presiding Officer. The members of the committee include the following: Charles Altick, Auglaize Box Board Company, St. Mary's, Ohio; R. H. Bursch, International Paper Company, New York; Anthony Desiderio, Whippany Paperboard Company, Whippany, N. J.; Sidney Frohman, Hinde & Dauch Paper Company, Sandusky, Ohio; W. C. Gouldman, Chesapeake Corporation, West Point, Va.; V. C. Hobbs, Fiberboard Products Company, San Francisco, Cal.; J. R. Kennedy, Federal Paper Board Company, Bogota, N. J.; M. C. McDonald, Brown Paper Mill Company, Monroe, La.; Sidney Phelan, West Virginia Pulp and Paper Company, New York; and P. A. Shilling, Waldorf Paper Company, St. Paul, Minn.



Famous Lobdell products include Calender Stacks, Micrometer Roll Calipers and "Puraloy" Rolls. (The latter not obtainable for the duration.)

Back in the Stack faster!

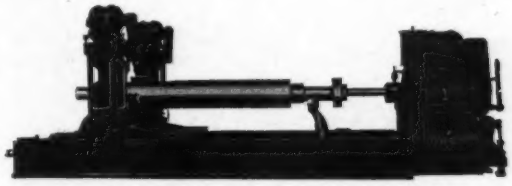
Never was the speed and convenience of re-grinding with your own Lobdell Roll Grinder more important than now. With it, rolls are resurfaced and back in service with least delay . . . so that, while you can't get all the rolls you want, you can get more production from rolls you have! This is an advantage that more than 70 leading paper mills now enjoy.

LOBDELL

COMPANY

Wilmington, Delaware

108 Years in Business



LOBDELL ROLL GRINDERS are substantially proportioned, generously powered machines with many exclusive features important to accuracy—ease of use—and long, trouble-free operation. *Ask for details; no obligation.*

How to Get Better Process Water

NORWOOD FILTERS WILL GIVE YOU PERFECT PROCESS WATER

NORWOOD Filters will give you perfect process water because they are built on the basis of half a century of experience with paper mill process water problems. They include modern features to give maximum efficiency at low operating cost.

Now is the time to check over your filters . . . to plan additions to bring them up to top efficiency and the capacity you require. *Send for your set of Engineering Data Units, without obligation.*

The Norwood Engineering Company

17 No. Maple St., Florence, Mass.

Get a Good Start And a Good Finish With

NORWOOD

WATER FILTERS AND PAPER FINISHING MACHINERY

CONSTRUCTION NEWS

Under limitations order L-41 all projects involving expenditures of more than $5,000 must be specifically approved by the War Production Board. The status of projects reported herewith under the provisions of the order is not known.—EDITOR.

Cincinnati, Ohio—The Clopay Corporation, 1203 Clopay square, manufacturer of paper products, etc., has taken out a permit for alterations and improvements in plant. No estimate of cost announced. Work will be placed under way at once.

Milwaukee, Wis.—The Milwaukee Waste Paper Company, 2342 North Newhall street, waste paper products, has taken over a two-story building on local site at 1742 Palmer street, and will remodel and equip for a new storage and distribution plant. General contract for construction work will be placed soon. No estimate of cost announced. Leigh Hunt, 152 West Wisconsin avenue, and Walter G. Memmler, 1825 East Hartford street, are associated architects.

Buffalo, N. Y.—The United States Corrugated Fibre Box Company, 180 Hopkins street, manufacturer of paper boxes and containers, is running on a full capacity schedule, giving employment to a large working force in all departments. A condesirable part of output, it is understood, is for the Government. Company is planning additions to present working quota, as soon as operatives can be secured.

Lockport, N. Y.—Fire recently at mill of the United Paperboard Company, Lockport, manufacturer of box board, chip board, etc., previously noted in these columns, was confined largely to a warehouse building at the mill, used for waste paper service, and was filled with about 2500 bales of such material at time of fire, which spread rapidly. Loss is reported at close to $50,000, as stated in former reference. There has been no interruption in operations at the plant.

Woodfibre, B. C.—The British Columbia Pulp and Paper Company, Ltd., Bank of Nova Scotia Building, Vancouver, B. C., has plans maturing for new addition to sulphite fiber mill at Woodfibre, consisting of a one-story building, reported to cost over $75,000, including equipment. Bids are scheduled to be asked soon on general erection contract.

H. P. Carruth to be Union Bag V. P.

Henry P. Carruth, Vice-President of the Brown Company in Berlin, New Hampshire, will shortly join the Union Bag & Paper Corporation as Executive Vice-President according to an announcement made today by Alexander Calder, President of Union Bag & Paper Corporation.

Mr. Carruth studied chemical engineering at Massachusetts Institute of Technology. He entered the paper business in 1906 and later became Vice-President of the Mead Corporation of its wholly owned subsidiary, Dill & Collins.

In 1936 he became associated with the Brown Company as General Manager for the Trustees.

He served in this capacity until its reorganization in 1941 and then became Vice-President and Chief Executive Officer.

Mr. Carruth is also a member of the Industry Advisory Committee of the War Production Board.

Pacific States in Separate Zone

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 12, 1943—Pacific Coast States are placed in a separate zone similar to that long established in the industry in a revision of the regulation governing kraft wrapping papers and bags, the OPA has announced. Chief results of the change will be that at certain inland points the buyer will absorb a larger proportion of the freight on shipments, the seller benefiting proportionately.

California, Oregon and Washington, as well as the cities of Coeur d'Alene, Wallace, Moscow and Lewiston in Idaho will comprise the new Zone D, this territory being removed from Zone A in which it previously was included.

In setting up the new zone, under Amendment No. 5 to Maximum Price Regulation No. 182 (Kraft Wrapping Papers and Certain Bag Papers and Certain Bags) effective April 7, OPA permits maximum prices to be made f.o.b. docks or cars Seattle, Tacoma, and Vancouver in Washington, Portland, Oregon, San Francisco, Oakland, San Pedro, Long Beach or Wilmington in California, or f.o.b. cars Los Angeles, California, with no further freight allowance. Previously the ceilings were f.o.b. Mill, with full freight allowance to destination.

This and other changes have been adopted by OPA following consultation with the Industry Advisory Committee, corprising representative trade members. The other changes include:

1. The zones now set forth in the amendment are applicable to sales of bags as well as the papers covered by the regulation.
2. Definitions have been changed to coincide more closely with actual specifications of the papers.
3. The period in which a company can establish its differentials for special specification wrapping paper has been changed to October 1-31, 1941, from January 1, 1941-October 15, 1941.
4. In a move to lighten the clerical burden of distributors, the provision requiring separate listing of manufacturers' differentials has been revoked.

SKF Promote Executives

Three executive promotions were announced by S. F. Wollmar, executive vice-president of SKF Industries, Inc., Philadelphia manufacturers of ball and roller bearings, following a recent meeting of the board of directors.

Thomas W. Dinlocker was elected vice-president and treasurer, Richard H. DeMott vice-president in charge of sales, and C. P. Collins, secretary. William L. Batt, vice-chairman of the War Production Board, retains the presidency.

At Your Service...

You are invited to use Our Technical Service on

STARCHES
GUMS
SYRUPS
DEXTRINES

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STARCH
FOR ENZYME CONVERSION

AMIJEL
FOR THE BEATERS

LAM-O-DEX
FOR LAMINATING

CORAGUM
FOR CORRUGATING

WRITE...

Corn Products Sales Co.
17 BATTERY PLACE
NEW YORK CITY

HOOKER
LIQUID CHLORINE

This old stand-by of the pulp and paper industry is one of the world's busiest chemicals. Its war uses include the safeguarding of health on battlefields and the home front, as well as producing a long list of chlorides used in scores of war-essential industries.

HOOKER Liquid Chlorine has a long record of established purity and uniformity. This record is zealously guarded even today when the war is taxing the Nation's chlorine producing capacity. While war-needs take precedence here at HOOKER we value our customers in the paper industry and will do all we can for them in compliance with government regulations.

ARMY E NAVY
HOOKER ELECTRO CHEMICAL COMPANY

HOOKER
ELECTROCHEMICAL
COMPANY
Niagara Falls, N. Y. • Tacoma, Wash.
New York City • Wilmington, Calif.

HOOKER CHEMICALS

New York Paper and Pulp Market Review

Paper Demand Continues at High Level—All Bleached Pulps Are in Heavy Demand With Unbleached News and Groundwood Easier —New and Old Cotton Rags Are Active—Waste Market Improved.

Office of the PAPER TRADE JOURNAL.
Wednesday, April 14, 1943.

Demand for paper is rather widely reported as continuing heavy under the curtailed production schedule which has been in effect for some time. Current reports received from some of many manufacturers' representatives, jobbers, and general paper merchants continue to reflect concern at the low fixed level of prices relative to the rising level of costs.

The index of general business activity for the week ended April 3 declined to 136.3, from 138.2 for the previous week, compared with 136.0 for the corresponding week last year. The index of paper board production was 150.9, compared with 148.7 for the preceding week, and with 166.9 for the corresponding week last year

Paper production for the week ended April 3 was estimated at 88.2%, compared with 103.4% for 1942, with 93.5% for 1941, with 79.4% for 1940, and with 83.7% for the corresponding week for 1939.

Paper board production for the week ended April 3 was 95.0%, compared with 100.0% for 1942, with 83.0% for 1941, with 68.0% for 1940, and with 71.0% for the corresponding week for 1939.

OPA Price Regulation No. 359, issued on April 7 and which became effective on April 12, 1943, includes certain converted paper products, such as plates, dishes, spoons and forks, and liquid-tight cylindrical containers. It provides maximum prices per thousand units for various sizes of these items. Regulations are embodied for less than maximum prices, export sales, taxes, adjusting pricing, transfers, discounts and allowances, enforcement, licensing, etc.

Wood Pulp

Demand is reported heavy for prime grades of all bleached pulps and on all grades of Northern kraft. Unbleached sulphite and sulphate are firm. The news grade of unbleached sulphite, and groundwood pulp are easier. The apparent general trend in demand of the market as a whole is downward, with less inquiries being received at this date.

Rags

Mill buying of new cotton rags is reported fair this week. Sales to roofing mills are good, with prices firm and with most sales at ceiling prices. Mixed rags are active.

Old Rope and Bagging

Old rope continues in heavy demand and mill buying steadily absorbs limited supplies of essential Manila and other imported fibers for war requirements.

Demand for scrap bagging is heavy at this date. This market is strong under the influence of limited supplies and the stabilizing effect of OPA General Price Regulation, which included scrap bagging and burlap. Maximum prices are those prevailing for March, 1942.

Waste Paper

Demand for waste paper is reported substantially improved and active at this date for envelope cuttings and shavings, kraft and jute corrugated boxes. Sales of No. 1 mixed paper at .60 per cwt., and folded news at .70 per cwt. are currently reported.

Twine

No important change in the twine market has been reported at this date. Government requirements for Manila and other imported fibers is so large that little good grade twine and cordage is available for civilian uses. The use of paper twine is being extended.

Eastco Salesmen Meet in Chicago

A very interesting luncheon-meeting was held at the LaSalle Hotel on April 9, 1943, by the Chicago paper merchants handling products of Eastern Corporation, Bangor, Maine. The attending salesmen were given a presentation of Eastern's 1943 advertising and promotional plans by Ralph Will, the company's advertising manager. The meeting was then addressed by John Massengale, Eastern's sales manager. Michael McGarry, district sales manager, was chairman of the meeting, and also addressed those present. Salesmen and executives from Bermingham & Prosser Company, Berkshire Papers, Inc., and LaSalle Paper Company, Chicago, Illinois, were present and the meeting was thoroughly enjoyed by those who attended.

Royal S. Kellogg Honored

A testimonial luncheon for Royal S. Kellogg was given Tuesday noon by members of the newsprint industry at the Waldorf-Astoria in recognition and appreciation of his twenty-five years of devoted service to the newsprint industry of North America. The luncheon was attended by about twenty-five representative members of the industry. President Arthur L. Hobson of the Newsprint Service Bureau and president of the St. Croix Paper Company, presided and presented Mr. Kellogg with a gold pocket watch, suitably inscribed, and a motion picture camera outfit. Mr. Hobson in a laudatory address, briefly reviewed Mr. Kellogg's important connection with the industry over the past twenty-five years.

To Go with Hurlbert & Hatfield

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 12—Morgan L. Ellis, head of Morgan L. Ellis & Co., Inc., a concern which is being liquidated, is join the firm of Hurlbert & Hatfield in a sales capacity, effective May 1.

FARREL ROLLS

EXCEL IN DEPENDABLE, LOW-COST PERFORMANCE

Built into Farrel Rolls are qualities that enable them to give years of dependable service at low maintenance cost. Their bodies and journals are accurate and smoothly finished, shape and amount of crown are scientifically correct, and their chilled body surfaces are uniform in hardness and depth.

These characteristics make Farrel Rolls an important factor in the production of paper of uniform high quality.

Farrel rolls are made in any diameter from 4" to 72" and any face length up to 312", of chilled iron or extra hard Farreloy and Farrel Ni-Hard.

FARREL-BIRMINGHAM COMPANY, INC.
50 State St., Ansonia, Conn.

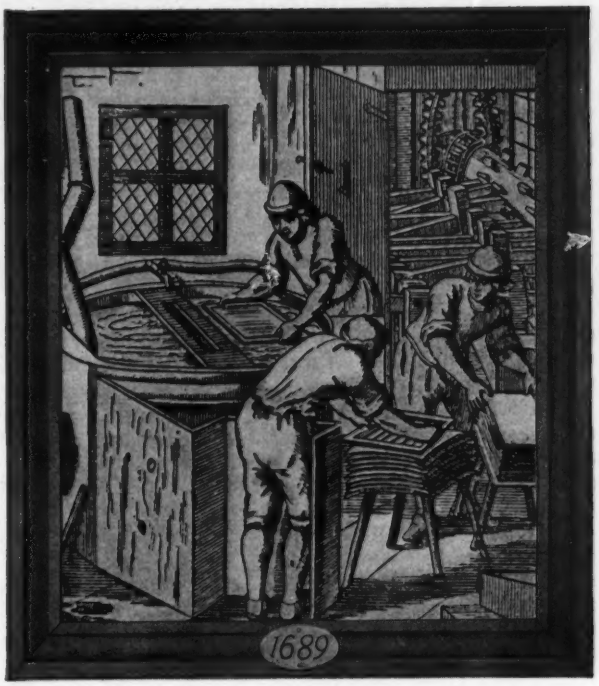
CONTINUOUS PUMPING OF HIGH CONSISTENCY STOCKS WITHOUT CLOGGING, WITHOUT SHUTDOWNS

Your FREDERICK pump handles high density stock with the greatest of ease, meets your operating needs perfectly . . . because FREDERICK pumps are *engineered specifically for each job*. And, your FREDERICK pump is *guaranteed* to meet the operating conditions for which it is sold!

Ask about it.
No obligation whatsoever.

FREDERICK PUMPS

The FREDERICK IRON & STEEL CO.
Frederick, Maryland



This WAS THE ART OF PAPER MAKING

Sheet by sheet the early paper maker produced paper. To remove water from the sheets, he placed them between felt layers and pressed out the water. He was interested in making one perfect sheet at a time. His was an art — the beginning of an industry that today produces tons of paper instead of sheets. But felts remain as part of paper making equipment, progressing with the industry — ever keeping pace with production methods. Since 1890 Appleton Felts have kept pace with paper making. That's why they are today preferred by mills everywhere.

•

This advertisement is a continuation of a series started in 1940 depicting early history of paper making.

APPLETON WOOLEN MILLS, APPLETON, WIS.

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL.
Wednesday, April 14, 1943.

BLANC FIXE—Prices on blanc fixe are firm and unchanged and conform to prevailing market levels. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton, f.o.b., works. Demand reported good for the week.

BLEACHING POWDER—Quotations on bleaching powder are firm. Demand reported good for the week. Bleaching powder is currently quoted at $2.50 per 100 pounds, in drums, at works.

CASEIN—Prices on casein are unchanged for the current week. Standard domestic casein, 20-30 mesh, is currently quoted at 19 cents per pound; 80-100 mash, at 19½ cents per pound. All prices in bags, car lots.

CAUSTIC SODA—Quotations on caustic soda continue unchanged at prevailing market prices. Demand reported active. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds in drums, car lots, at works.

CHINA CLAY—Prices on china clay are firm and conform to prevailing market levels. Demand reported moderate at this date. Domestic filled clay is currently quoted at from $7.50 to $15 per ton; coating clay from $12 to $22 per ton, at mines. Imported clay is currently offered at from $13 to $25 per long ton, ship side.

CHLORINE—Quotations on chlorine are firm and unchanged. Market strong. Government demand is reported heavy during the current week. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported firm for the week with lower prices on some grades. "G" gum rosin is currently quoted at $3.50 per 100 pounds, in barrels, Savannah. "F" wood rosin is currently quoted at $3.45 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is currently quoted at $3.69 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm. Demand moderate for the current week. Domestic salt cake is currently quoted at $15 per ton, in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b., shipping point. The quotation of $16 per ton on imported salt cake is nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market levels. Demand reported active for the week. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90, in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are reported unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds. All prices in bags, carlot, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Supply reported more limited for the current week. The commercial grades are currently quoted at from $1.15 to $1.25; iron free at from $1.75 to $1.85 per 100 pounds. All prices in bags, carlots, f.o.b., works.

SULPHUR—Prices of sulphur are firm and continue to conform to prevailing market prices. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby carlots are quoted at $18 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mines. No quotations on imported talc.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

News, per ton—			
Roll, contract	*$54.00	@	—
Sheets	62.00	"	—
* OPA Maximum Price.			
Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag	*4.375	"	—
* OPA Manufacturers' Prices.			
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.05	"	—
White No. 1½	1.00	"	—
White No. 2	1.00	"	—
Anti-Tarnish M. G.	.95	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Toilet—1 M. Sheets—Per Case			
Unbleached	4.16	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.35	"	—
Bleached, Jr.	2.65	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	5.50	"	5.75
No. 2 Manila Wrapping, 35 lb.	5.25	"	5.50
Boards, per ton—			
News	*48.00	@	—
Chip	*45.00	"	—
Sgl. Mla. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items; Delivered in Zone 1:

	Bonds		Ledgers
100% Rag Ext. No. 1	$39.10 @	$46.80	$40.25 @ $47.25
100% Rag	32.20 "	37.75	33.35 " 39.25
85% Rag	.... "	....	29.90 " 35.00
75% Rag	23.00 "	27.00	24.15 " 28.25
65% Rag	.... "	....	22.80 " 27.75
50% Rag	18.70 "	22.75	19.90 " 24.25
25% Rag	16.40 "	20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds		Ledgers
No. 1	$10.55 @	$12.75	$11.70 @ $14.25
No. 2	9.65 "	11.75	10.80 " 13.25
No. 3	9.20 "	11.25	10.35 " 12.50
No. 4	8.90 "	10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated	$13.65 @		$15.50
No. 2 Glossy Coated	12.40 "		14.00
No. 3 Glossy Coated	11.60 "		13.25
No. 4 Glossy Coated	11.15 "		12.75
No. 1 Antique (watermarked)	10.25 "		11.75
No. 2 Offset	9.60 "		11.00
A Grade E. F.	9.35 "		10.75
A Grade S. & S. C.	9.60 "		11.00
B Grade E. F.	8.85 "		10.25
B Grade S. & S. C.	9.10 "		10.50
C Grade E. F.	8.55 "		9.75
C Grade S. & S. C.	8.80 "		10.00
D Grade E. F.	8.25 "		9.50
D Grade S. & S. C.	8.50 "		9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight to Destination.

Bl. Softwood Sulphite	$76.00
Unbl. Softwood Sulphite	65.00 @ 66.00
Bl. Hardwood Sulphite	73.50
Unbl. Hardwood Sulphite	63.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich	72.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate	62.00
S. Semi-Bleached Sulphate	75.00
N. Unbl. Sulphate	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	66.00
Unbl. Soda	62.00
Groundwood	46.00

Transportation Allowances Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50

	50%-80% Air Dry Weight
Northeast	$11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

Domestic Rags

New Rags (Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	*7.25	@	—
Silesias No. 1	*5.75	"	—
New Unbleached	*7.50	"	—
Blue Overall	*5.50	"	—
Fancy	*3.50	"	—
Washables	*3.00	"	—
Bleachable Khaki Cuttings	*4.25	"	—
Unbleachable Khaki Cuttings	*3.50	"	—
* OPA Maximum Prices.			

PARIS BLACKS

BLACKS KNOWN FOR THEIR TONE, STRENGTH AND MISCIBILITY

BLAC-KING 45 RX

An aqueous dispersion of Carbon Black with a solid content of 45%. This product is specially designed for use as a coloring agent for paper. Clean to handle and eliminates possible contamination of other colors in the beater room.

Samples and information on request

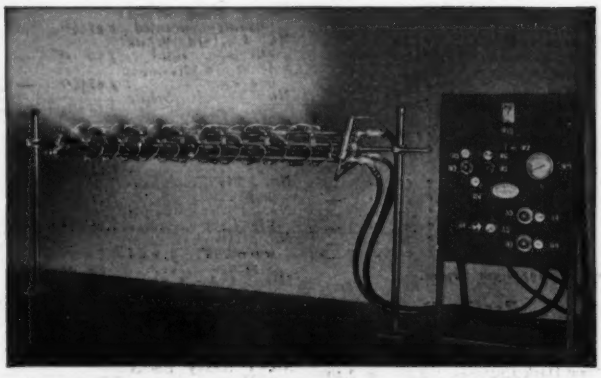
UNITED CARBON COMPANY INC.
Charleston, W. Virginia

More than just a TRADE MARK

EXCELSIOR KNOX Woolen Co. Camden, Me. FELTS & JACKETS

BUT also a guarantee by men who for 78 years have prided themselves in making finer felts. TO YOU —this is the mark of dependability, longer felt life and greater saving.

KNOX WOOLEN CO.
CAMDEN, MAINE.



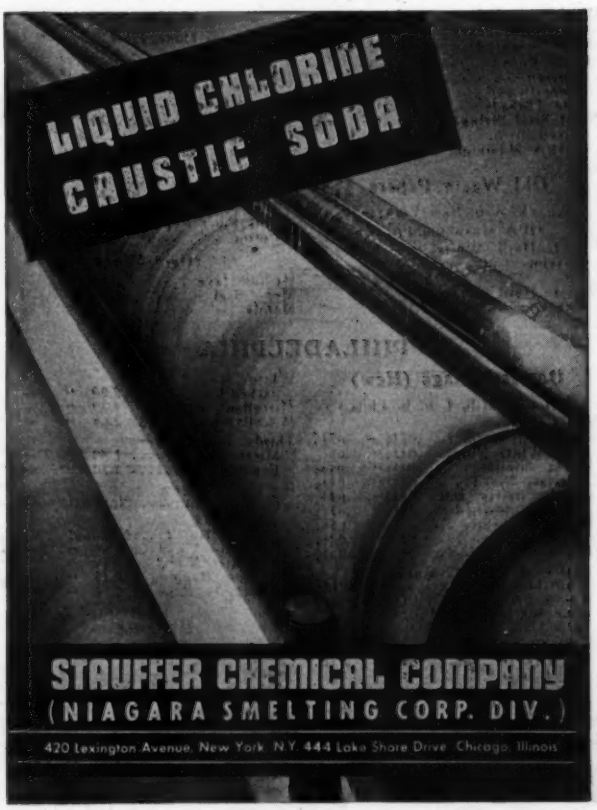
SPRACO BATTERY SPRAY MOISTENING EQUIPMENT

For the application of moisture in the form of coarse spray, fine spray or mist of uniform density across any desired width of web, with controls for varying the amount of moisture sprayed, at the same time maintaining uniform distribution.

Used extensively for the elimination of production difficulties due to uncontrolled moisture content. Improves finish, increases fibre strength and flexibility, eliminates static, prevents warp and waste. Each installation designed to meet operating requirements for any specified width, weight and speed of paper.

Write to

SPRAY ENGINEERING CO.
118 Central St. Somerville, Mass.


LIQUID CHLORINE
CAUSTIC SODA
STAUFFER CHEMICAL COMPANY
(NIAGARA SMELTING CORP. DIV.)
420 Lexington Avenue, New York N.Y. 444 Lake Shore Drive, Chicago, Illinois

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.00	@	4.25
Wool Tares, light	4.25	"	4.50
Wool Tares, heavy	4.50	"	4.75
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	4.25	"	4.75
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	1.00	"	1.20

* OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)
OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.57½	"	—
Mixed Books	.85	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old Kraft Corrugated Containers	1.50	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
Old Corrugated Containers	.82¼	"	—
Mill Wrappers	.85	"	—

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.26	"	—
Unpolished—			
Box	.17¼	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—

(Hard Fiber)

Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1	.07¼	@	.07½
New White No. 2	.04½	"	.05
Light Silesias	.04½	"	.04¾
Silesias, No. 1	.04	"	.04¼
Black Silesias, soft	.03¾	"	.04
New Unbleached	.07¼	"	.07½
Washable Prints	.03¾	"	.03½
Washable No. 1	.02	"	.02½
Blue Overall	.04½	"	.05½
Cottons—According to grades—			
Washable shredding	—	"	.01¾
Fancy Percales	.03¼	"	.03½
New Black Soft	.02¾	"	.03
New Dark Seconds	1.75	"	2.00
Khaki Cuttings—			
No. 1 O. D.	.03	"	.03¼
No. 2 Mixed	.02¼	"	.02½
Corduroy	.01¾	"	.02¼
New Canvas	.04¾	"	.05¼
New Black Mixed	—	"	.02½

Domestic Rags (Old)

White No. 1—Repacked	3.80	"	—
White No. 2—Repacked	2.90	"	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
Sisal Rope	3.75	"	—
Mixed Rope	.75	"	1.00
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.80
Wool Tares, heavy	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila)
OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Box Board Cuttings	.72½	"	—
Jute Corrugated Cuttings	.90	"	—
Overissue News	.85	"	—
No. 1 News	1.00	"	—

BOSTON

Old Papers

(F. o. b. Boston)
OPA Maximum Prices

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Overissue News	.85	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old Corrugated Containers	1.00	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	3.75	@	4.00
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	1.35	"	1.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	4.50	"	5.00
Jute Carpet Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.60	"	3.85
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	—
Aust. Wool Pouches	4.65	"	4.87½
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Bagging	1.35	"	—*

* OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¾	"	.05
New White No 1	.06¾	"	.07
New Light Flannelettes	.05½	"	.06
Canton Flannels, Bleached	.06	"	.06½
Underwear Cutters, Bleached	.06¾	"	.06¼
Underwear Cutters, Unbleached	.05¾	"	.06
Silesias No. 1	.06	"	.06¼
New Black Silesias	.03	"	.03½
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.06½	"	.06¼
Blue Cheviots	.05½	"	.06
Fancy	.02¾	"	—
Washable	.02¾	"	—
Khaki Cuttings	.02¾	"	.03
O. D. Khaki	.03½	"	.03¾
Corduroy	.03½	"	.03½
New Canvas	.06¼	"	.06¾
B. V. D. Cuttings	.06¼	"	.06¾

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—*
Miscellaneous	3.20	"	—*
White No. 2—			
Miscellaneous	2.65	"	—*
Twos and Blues, Repacked	2.20	"	—*
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—*
Miscellaneous	1.80	"	—*
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—*
No. 2	1.45	"	—*
No. 3	1.35	"	—*
No. 4	1.35	"	—*
No. 5, Quality A	1.35	"	—*
Quality B	1.20	"	—*
Quality C	.95	"	—*
* Old Manila Rope	5.75	"	—

* OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
OPA Maximum Prices.

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Box Board Cuttings	.72½	"	—
Jute Corrugated Cuttings	.90	"	—
Overissue News	.85	"	—
No. 1 News	1.00	"	—
No. 1 White Ledger	2.17½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bags	1.45	"	—